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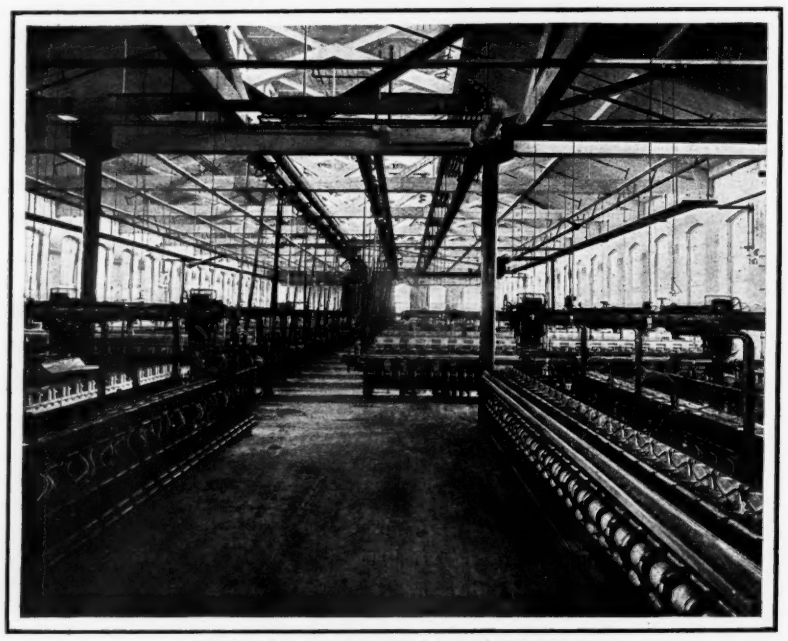

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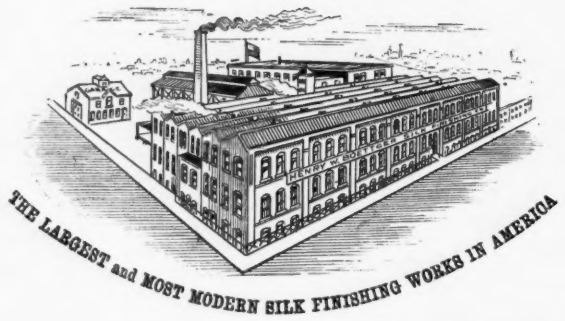

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MARCHING ON TO SUFFRAGE

Three thousand women, headed by pipers, marched down Fifth Avenue, New York, from Fifty-seventh Street to Union Square, on Saturday, May 6th, in demonstration of their desire for the suffrage. Banners and allegorical floats lent a spectacular element to the procession, which was heartily cheered by crowds along the route

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Comment

In Mexico

It looks as though President PORFIRIO DIAZ had overstayed his market. Very likely the business of being perpetual President is like the business of stock speculation in that it so affects the mind that you can't stop at the right time. It has been considered that DIAZ had in Gen. BERNARDO REYES a man capable of handling Mexico and to whom in 1904 or 1910 he might have transferred his power. General REYES in those years was an aspirant for the Presidency. DIAZ talked about retiring, but worked to avoid it. He succeeded. General REYES was beaten in the so-called "elections" and submitted. DIAZ got rid of him by sending him to Europe, and MADERO developed as a revolutionary leader.

It takes considerable force of will to resign the Presidency of Mexico, and it may be doubted if DIAZ is as capable of doing so as he was ten years ago. General REYES is on his way home. But the cards have been shuffled and there has been a new deal since he went away, and there is no telling whether or not he can get a hand in the game now.

The capture of Juarez and General NAVARRO on May 10th is MADERO's most considerable military success so far. Some scores of dead and two or three hundred damaged men were consequences of the fight. And now General MADERO issues his manifestos from the municipal building of Juarez and writes after his name "Provisional President of Mexico." But he speaks with moderation, and the negotiations for a settlement seem to proceed.

On our side of the line everybody seems to concur in support of a strong policy of hands off, except General Gumshoe BILL STONE, of Missouri, who talked obstreperously in the Senate about crossing the border and wading in, but got no encouragement from either his fellow-legislators or the press. That was a superfluity of naughtiness in Gumshoe BILL such as the apostle warns us to lay apart.

Mr. Stimson Goes to the Cabinet

Mr. HENRY L. STIMSON is an able and energetic lawyer who served with distinction as United States District Attorney for this district and chose the wrong year to run on the Republican ticket for Governor of New York. He is to succeed Mr. DICKINSON as Secretary of War, and we presume he will do well in that office and will prove a valuable member of Mr. TAFT's Cabinet.

Very likely, too, Mr. TAFT's Cabinet will be a good company for Mr. STIMSON to be joined to. He has rather an urgent temperament, and last fall he got into company that was possibly more stimulating than was good for him. So it seemed, anyhow. But his present appointment carries him into a pretty steady-going family.

His job is to keep our powder dry. He ought to do well at that, and we suppose he will be in sympathy with the current disposition at Washington to be saving of that powder. What he knows of soldiering from service as a member of Squadron "A" of the National Guard of New York will not come amiss.

Mr. DICKINSON retires for personal reasons, having complicated and pressing business concerns to attend to at home. He has been an excellent Secretary of War.

The Two Oppositions to Taft

In one of the papers Mr. WILBUR WAKEMAN, secretary of the Protective Tariff League, is quoted as follows:

> We want to make the Democrats responsible for reciprocity. In our last platform we pledged ourselves to maintain the Republican principle of protection. President TAFT has boldly undertaken to break that pledge. Vice-President SHERMAN will lead the Republican hosts of protection to victory in 1912.

If that is authentic it may also be significant. We find it difficult to take Mr. SHERMAN seriously as a candidate for Presidential honors, but that is not the important part of Mr. WAKEMAN's statement. The important part is the announcement from that quarter of candid opposition to TAFT; for what is thus indicated is that the President, having already incurred the displeasure of the extreme Progressives, can now offset that with the displeasure of the extreme stand-patters. The combination is decidedly favorable to his chances, for we hardly expect to see good teamwork between Vice-President SHERMAN and Senator LA FOLLETTE. It would be like the two uttermost wings of an army combining to crush the center, and what that is like military history does not inform us. It would be interesting to see what would happen to a candidate named by such a combination, but curiosity along that line will doubtless remain ungratified.

The Perfect Tribute

The most striking and valuable endorsement of the work of the House Democrats is not that which comes from the press. It is that which comes from the other side of the House itself. Look at the votes on the final passage of the measures so far considered. Leaving out the reform of the rules and the reduction of expenses, here is the list of the things done in one month of the special session:

A joint resolution for an amendment to the Constitution to secure direct elections of Senators.

A bill to secure the publication before elections of campaign expenditures.

The Canada reciprocity bill.

The farmers' free-list bill.

To the farmers' free list twenty-three Republicans gave their votes. To the reciprocity bill nearly half of them gave their votes. A majority of them voted for the other two measures. It is pretty plain that when the record is brought before the people in the next campaign the Republicans are going to be at a disadvantage. They cannot pitch into a single thing yet done by the majority without hitting some of their own fellows. On reciprocity they will simply have to keep mum, and if they don't the Democrats can just leave them to fight it out among themselves, led by Uncle JOE and DALZELL on one side, and the President and Mr. MCCALL on the other.

Incidentally, we extend our sympathy to Mr. MANN of Illinois, who is supposed to be leading the House Republicans. The cartoonists used to be given to depicting Presidents and other public men as trying to look contented and graceful while riding two horses with minds of their own. If anybody is at present entitled to preempt that pose, it's Mr. MANN. When he gets through, watch if he doesn't make for the circus to see how the other fellow does it.

Mr. Hitchcock

The Post-office Department is to be investigated, and that means, we presume, that the Postmaster-General is to be investigated. The House resolution gives the committee a general authority to go into the entire working of the department, but it also specifies some of the things which it is particularly desired to learn. One of these things is embraced in this clause:

> The committee may further inquire into and report to what degree the public interests and the reasonable wishes of the communities affected have been disregarded in the establishment, removal, and discontinuance of post-offices, and the appointment of postmasters under what is known as the referee system and other systems adopted by the department.

It is high time this particular inquiry were made. It should not be obscured by the other inquiry, which will also be made, into the treatment of certain periodicals, such as those of the Lewis Publishing Company. It is important to learn whether the Postmaster-General has attempted, by the manipulation of postage rates, to discriminate against certain periodicals. But it is more important to determine whether the Postmaster-General has been or is attempting, by the manipulation of appointments, to control the next Republican national convention. For that substantially is one of the charges against Mr. HITCHCOCK. It is charged that he has used the patronage at his disposal, in the South particularly, to establish and maintain a machine which he can control; that he has in this way taken a hand in the factional divisions in his party, rewarding his supporters and punishing his critics; that he has hindered instead of helping the movement for a real and decent Republican party in the South, and that the only logical goal of his course, if successfully pursued, would be to enable him to name the next Republican candidate for President. Such charges ought not to be accepted as true without investigation; but neither ought they to be dismissed, since they are made repeatedly and seriously, without investigation. The subject is not a new one. Mr. HITCHCOCK is not the first Republican manager to be accused of such practices. The manipulation of Southern delegations, whether with patronage or money, is a scandal and reproach of long standing, from which the Republican party cannot too soon free itself. Republicans who are wise will join with the Democrats in the effort to get at the truth.

Waiting on the Senate

This from Mr. MARTIN of Virginia, the Democratic leader in the Senate:

> I feel that, as the Senate has now been in session for more than a month, it is time that we should begin to do some of the work of the session.

Of course it's none of our business, but really we feel the same way. We can't help sympathizing with the plaintive remark of Mr. MARTIN, and endorsing what he added:

> I hope very much that these bills, which have not been considered in committee, will be considered, so that we will have a calendar which the Senate may take up, instead of adjourning, as we are now doing, from Monday until Thursday and from Thursday until Monday, without doing anything.

Three of the bills he referred to were, we believe, the reciprocity bill, the campaign-publicity bill, and the joint resolution for direct elections of Senators. It is generally conceded that all three will pass—that the Senate really favors them. Why, then, should the Senate delay? Well, it is its nature to; and of course we mustn't ask the Senate to change its nature without due consideration. At the end of the last session bills failed because the calendar was overcrowded. Here the complaint is that there is no calendar. Both situations seem to have the same effect. The month was consumed in organizing; yet the Senate is a continuing body, and ought not to require as much organizing as the House. The expense is about the same whether anything is done or not. We have no doubt that there are times when doing nothing may be the Senate's best way to serve the country. But at present the do-nothing policy seems to be rather overdone.

It is time for this thing to be taken up seriously. Next year's conventions should declare themselves concerning the Senate's apparently growing habit of unconscionable delay.

Speak Up, Brother Gompers

It seems that the murder of JOHN C. WARNER, the young engineer who was set upon and killed in the street in New York last October, is not likely to cause any person further inconvenience. It will be recalled that WARNER was starting off on a shooting trip, and happened to be carrying a shotgun. We believe that no one questions that he was set upon by strikers who mistook him for a "scab" workman armed for self-defense. There was evidence. One man was tried and acquitted; several others were indicted, but the indictments were dismissed last week. The evidence told the story, but it could not convict.

It seems to be in order that we should hear from Brother GOMPERS on the failure of this "frame-up."

Colonel Higginson

Until last week Massachusetts had two old-soldier HIGGINSONS whom she was especially proud of, Major HIGGINSON and Colonel HIGGINSON. Now, of those two, there is only Major HIGGINSON, for at the ripe age of eighty-seven Colonel THOMAS WENTWORTH HIGGINSON is dead. He lived indeed a long life, but every bit of it was full of interest—for himself and for others. It covered a great deal of our history, and of all the main events it covered Colonel HIGGINSON was himself a part. He was part of the New England renascence which gave us the best of our literature; part of the Unitarian movement, which profoundly affected all our thought; part of the great struggle over slavery, being both abolitionist and soldier; part of the great reconciliation that followed, and of the still more recent

movements for reform in our politics. The Unitarian clergyman who helped to rescue fugitive slaves and led a black regiment into battle, lived to vote for CLEVELAND and tariff reform and to call himself unequivocally a Democrat! He was an active, lively spirit up the very last, happy in the companionship of such old and intimate friends as MRS. JULIA WARD HOWE, and constantly gathering new friends as he went along. He was always a writer, and a writer with a market. For fifteen years, down to 1900, one of his steady employments was to write every week a half-page or more of paragraphs for HARPER'S BAZAR. His memories of his long life he gathered some years since in a volume of *Cheerful Yesterdays*. He lived in Cambridge, and was to the end a genial, optimistic American gentleman, peculiarly interesting and agreeable to young Southerners who went to Harvard.

There is an old gentleman in this city, also with a military title, though he is better known as a judge, who ought to have known Colonel HIGGINSON, for they would have liked each other. When the young HIGGINSON was studying transcendentalism and breaking down jail doors to free negroes captured in their flight from slavery, the young ROGER A. PRYOR, of Virginia, was preaching State rights and secession, and seconding STEPHEN A. DOUGLAS in a duel, and then precipitating the Civil War by telling South-Carolinians they must strike a blow if they wanted Virginia to join them. They two were about as far apart as it was possible for two Americans to be—one a Southern fire-eater and the other a New England abolitionist. Yet nobody who knew them both could fail to see that they were Americans of much the same type. Such Americans will not have again such a quarrel as they had. For the cause of it is gone, and nowadays all intelligent citizens of this country can know one another better than was possible when HIGGINSON and PRYOR were young.

A New Plan for Amherst

In the June number of HARPER'S MAGAZINE Mr. E. PARMELEE PRENTICE, of New York, describes the proposal, now under consideration and likely, we understand, to be adopted, to change the policy of Amherst College, abandon all effort and intention to compete in numbers with other colleges, and take what measures are possible to attract a limited number of able and zealous students, and give them four years of the best procurable general preparation for work in life. The chief changes suggested are to raise the standard of admission and of study after admission, limit the number of students, and devote the resources of the institution, not to buildings, grounds, and expansion, but "to the indefinite increase of teachers' salaries."

A fair trial of this experiment would be interesting to every friend and student of education in the country. If Amherst can operate a system of education that will attract abler young men, and turn out abler and more thorough scholars than the other colleges, she will confer a great benefit on the country, not only by providing useful men, but by demonstrating improved processes of training. The amount of time and money that is spent in the great popular universities of the East in giving lazy boys the mere rudiments of mental training is a sorrow to lamenting educators. It will go on, no doubt, with all its vast provision for the social and athletic side of college life, and immense diversion to them of time and attention, until it is demonstrated somewhere that for really ambitious youths there is something better offered which it will pay them to embrace. Inspiring teachers are nine-tenths of the battle of education. How interesting is this idea of paying out money, not for advertisement, scholarships, and the provision and operation of huge plants for the accommodation of boys who want to play, but for "the indefinite increase of salaries" of men fit to inspire and instruct boys who want to work! Let us hope Amherst will try it. It will take a good while—twenty years, say—to give it a fair test. There must be time to see what sort of a product the renovated Amherst can turn out, and how it compares in human efficiency with the men who emerge from the ruck of the great universities. For, after all, the crowd of a great university is a school in itself, out of which some able men get valuable lessons.

The Lawyers and Public Office

A distinguished lawyer, a Democrat, has resigned the office of Secretary of War and another distinguished lawyer, a Republican, has accepted it. Their recent predecessors have all likewise been distinguished lawyers. One of them was so fond of the law that it is generally understood he would much rather have been chief justice than President, and that he only reluctantly got into the running for the latter office which he now holds. Yet we do not recall any argument to the effect that the legal mind is particularly adapted to military affairs. It is true that our most famous War Minister was a lawyer—STANTON. It is also true that the present English War Minister, Lord HALDANE, is a lawyer. But in other than English-speaking countries it is the custom to put military affairs into the hands of military men. Of course it is generally conceded that those other countries are rather more military than we and England—that they are fonder both of soldiering and of soldiers. But that may not be the whole difference. Perhaps there is something in our traditional preference for legal ways of doing things, and our disposition to set the law things are done by above the mere doing of them. Then, too, there is our traditional high respect for the legal profession; we have not forgotten BURKE'S famous tribute to the American bar when we were only colonies, nor the wonderful part which that bar played in making us a nation.

Whatever the causes, the legal profession seems to continue to hold its own in our American public life as well as in England's. But it is not true that President TAFT has an entire Cabinet of lawyers. Not at all. No less than four of the members must be otherwise classified. There is a merchant, there is a capitalist, there is a farmer, and there is a politician.

The Scholars and Public Service

If the lawyers are holding their own there is another class that is more than holding its own. The jokes about the scholar in politics have lost vogue. He gets into politics too constantly and holds his own there too well. Governor WILSON is at present only the most conspicuous of many examples. Governor WILSON is a lawyer also, for that matter, but his national reputation was first achieved as a teacher of political science and a writer on government. One reason why the scholars are so much more successful in politics than they used to be is that political science is now become a recognized branch of scholarship and many of the brightest men we have go into it. They also specialize in it, and the result is that when there is search for the man who knows more about some particular public need than anybody else does, it is very frequently a scholar, not infrequently a college professor, who fills the bill. It is such as man as Professor MEYER of Wisconsin, now on the railroad commission, or President HADLEY of Yale, now on the railroad-bonds commission, or Professor ANDREW of Harvard, a specialist on money, who left his chair to help with monetary reform. But it is not characteristic of these men to be narrow specialists, for they are nearly always cultivated men and broad-minded Americans. Nor is it characteristic of them to be unpractical. It's because they are so intensely practical and business-like that there is still objection to them. The objection comes chiefly from the professional politicians, and if they were, according to the tradition, merely well-meaning and ineffective, the professional politicians would not object to them at all.

Minister and Congregation

Rev. CHARLES M. SHELDON, who wrote *In His Steps*, made the good Congregationalists of Kansas sit up the other day when he said every minister should provide a confessional. What he meant, as he subsequently explained to a reporter, was that "the relations of the minister to his congregation should be such that the members would be free to go to him and confess their troubles and receive advice." Curious! Aren't they now? Haven't they always been?

Manhattan's Bedraggled Parks

Can't the city of New York afford to hire a couple of active boys to pick up papers, banana skins, orange peel, and other scattering deposits in the little park in Madison Square? What little grass there is there needs sweeping. It was a forlorn-looking place last week, dirty, bare, unkempt, a detriment to the inculcation of a public standard of seemliness and order.

Whether the condition of any other park on Manhattan Island is much better we do not know. We read complaints about the state of Morningside. Central Park is a little better, but much dirtier and barer and more bedraggled than it used to be four or five years ago. No doubt dry weather tries all the parks just now; and of course the immense number of people who now use Central Park make its care and protection a hard problem. But the more people go into it the more it needs protection and the better worth while it is to keep it beautiful.

It must be remembered that this is a frontier town, constantly inundated with new people without local responsibility for anything, and unaffected by any local standard of manners. That complicates the work of keeping things in decent order. Besides that, the pressure of population on the Manhattan parks is enormous, necessitating the constant exercise of careful judgment to give the people the freest use of grass that the parks can stand without destruction. Of late this judgment has not been good. Commissioner STOVER seems to fail in appreciation of the sort of care and the degree of protection the parks require. They have deteriorated conspicuously under his management. Now he has driven Mr. PARSONS out, and it is a pity, for Mr. PARSONS both knew and cared about our parks, whereas Mr. STOVER seems to know little and care less.

Travels by Thackeray

The instalment of "Cockney Travels" by THACKERAY, which is published this week in HARPER'S MAGAZINE, is full of the flavor of its author, and the wonder is that it escaped print so long. THACKERAY wrote it seventy years ago, the record of a little journey in Wales by rail and coach through Bristol, Chepstow, Tintern, and Hereford to Chester with abundant observation of towns, churches, streets, woods, landscapes, inns, innkeepers, bar-maids, coachmen, children, men out of work, railroads and clergymen and reflections about them all. "It is ill to quarrel with these rapid strides which the age is making, but can anybody look back to the dear old coach days and a modest nine miles an hour without regret?" So the man of sentiment in 1841. What would he have said of the automobiles and the armies of pilgrim tourists from America!

He scolds and praises by turn, scoffs at this and that, damns Hereford heartily as a dull town and ugly, expounds the loveliness of Tintern Abbey, but all with the heart we know, quick with its sympathy for childhood, for kindness, for beauty, or for distress. The colliers out of work and begging from the coach passengers make him talk like a LLOYD-GEORGE Liberal about the suffering of "millions of men in England as bad off as starvation can ever make them," and pray "not that the poor should rebel, but that the rich should help them ere they do rebel." The scenes of that journey have doubtless changed much, the inns and streets and means of locomotion, but the mind that observed them a long lifetime ago seems a very contemporary mind. It makes one wish it were still here to comment on the scenes and people and problems of to-day.

Send it to Wells

MRS. FRANCES O'SHAUGHNESSY, the young wife who slew her husband "to save his soul," was hurriedly removed from the Tombs to Bellevue Hospital yesterday. For a time it was feared she would die, but last night her condition had improved and she was resting easily in the prison ward.—*Daily Paper.*

Some of the papers have given a great deal of space, with thrilling provision of head-lines and pictures, to Mrs. O'SHAUGHNESSY'S case. It was very pathetic. A young wife with a baby coming saw her young husband go trailing off after another woman, and shot him, as she said "to save his soul." Everything about her case was dramatic and affecting as the papers told of it. We have been wishing that somebody would send the story to Mr. H. G. WELLS, the novelist. He deals very much in these days with the situation of husbands who abandon their wives and take up with other women, but the deserted wives in his tales only weep. They don't shoot. The black tragedy and pathos of the O'SHAUGHNESSY story is a true purge of the passions, but WELLS is letting his faithless, rapscallion men off too easily. They don't reap as they sow.

Ought to Have Its License

The Gotham Hotel at Fifty-sixth Street and Fifth Avenue, New York, was trying again last week to get the Legislature to give it a liquor license. It has never been able to get one because it is across the street from the Fifth Avenue Presbyterian Church. There is a State law prohibiting the sale of liquor within two hundred feet of a church. The statute ought not to apply to such property as Fifth Avenue corners now are. It was passed to protect churches. Churches in the business streets of cities do not need any such protection and ought not to have it. The law ought to be amended.

A Quandary

It may reasonably be doubted whether, with all our getting, we really do get understanding; whether many of us do not wear our "enlightenment," like our garments, on the outside only; and whether essential human nature—modified here and there, it is true—does not remain perennially very much the same. And, in a certain sense, it may be hoped that it does so remain, and that essential human nature may prove robust enough to hold out against some of the experiments that are so relentlessly practised upon it. Take, for instance, much of the modern system of education, with its crass demand for utility, resulting in futility, and in the turning out of a being neither educated nor cultivated. For the public school, our great American agency for remodeling, our crucible in which we melt down and remould the human material dumped upon our wantonly hospitable shores, tends to turn us out a human product almost ideaproof in every direction. For the average mind, instead of being vivified, sensitized, and *educed*, is almost stoned to death by a multitude of small, unrelated, facts. With a system so minute and wearisome that it early kills curiosity and imagination, the cardinal forces of the mind, it is no wonder that the result is so wooden, limited, and self-sufficient. And if JOWETT could say in his day that, "Education is the grave of the mind," what might he not say in ours?

It is suggestive, therefore, to come sometimes upon the crude mind, upon primitive if not virgin soil, upon a quality and degree of intelligence that recall old, far-off, forgotten things. For to be incurious in God's handiwork, whether it be of nature or of man, is one of the worst things that can happen to any of us; while to give at least a hearing to what may present itself is one of the ways of wisdom, and is to supply imagination with its necessary food.

And just here may come in one of many inevitable questions. What is the connection between superstition and faith? Do they spring from the same root? Are they differing manifestations of the same inherent force? A well-disciplined and well-educated mind and soul should possess transcendent faith, which, producing hope and courage, will invariably set free all that nature's best energies. On the other hand, the crude mind and soul, possessing superstition rather than faith, will show a corresponding fear and hopelessness that as surely result in inaction.

Here, for instance, is a woman of middle age. She can read and write, and speaks English, German, and Magyar. She is strong and vigorous of body, seemingly so of mind, is married, and has three children, boys. Unfortunately, her husband, though a good workman and making good wages, is an occasional drunkard, and, when in his fits of drunken fury, is cruel to the wife and children. Time and again she temporarily leaves him, with the intention of supporting herself and of providing partly for the children. The boys, fearing their father and suffering from his temper, are most desirous to have her leave him—they urge her so to do; the woman herself seems to want to leave him, since it is the best and wisest course; and yet . . . She tells this straight, plain, earnest tale, and, after hearing it, you rub your eyes and wonder whether you are awake and whether this is the twentieth century or the twelfth. She never loved the man, she says, never wanted to marry him. But he was a persistent suitor and gave her little peace. And in their workaday life she saw much of him, or he contrived to see much of her, and to make his feeling and persistence felt. This woman, Anna, "never took anything"; beer gave her a headache, wine made her sick; but one day, being with some friends, among whom was a young married woman, a particular partisan of the determined suitor, this young married woman gave Anna a glass of blackberry wine or cordial, saying, "You don't like anything; but this is just a blackberry drink that won't hurt you." And the confiding Anna drank. But this seemingly innocent blackberry decoction was in reality a love-philtre, a spell, prepared to work cunningly and completely its woful charm. From that time she could no longer resist the ardent wooer. His influence was paramount, and against her instincts and will she married him, with the resultant misery. All this does Anna most potently believe, and tells it simply to account for conditions and her inability to cut loose from them. And so where are we? In an ordinary American town, or back in Tintagel, with Tristram and Iseult, in the regions of poetic mist and fancy? "The mind is its own place, and in itself can make a heaven of hell, a hell of heaven." And each human heart has a sphere and conditions of its own. Religion does not help Anna, for her faith in things divine is no stronger than her belief in things magical—in the efficacy of the treacherously administered love-potion. The house is divided against itself: superstition neutralizes faith, and between the two will lies truly spellbound or paralyzed.

But what is to be done? What is the worth of an education or of a schooling that leaves the core of life, heart, and imagination untouched, undisciplined, uninstructed? What does Anna's neat little shell of facts, of practicality, of vaunted "utility," do for her or for any of us, if the living creature within remains unchanged? And meantime one would so like to help her. But how? where can one place the lever, how affect her, how influence? Shall I treat the love-philtre as *real*, invent another tale and try to administer an antidote? How far is one warranted in fighting the devil with fire, in using error to drive out error, in exorcising untruth by untruth?

And so we open up—or Life opens up—many vistas, and we pass from the mind to the spirit, from intellect to morals. It is always the way. You cannot take life at any one of the least of its facets without implying and reckoning with all the others. With all thy getting, get understanding. Be sure that you are touching the consciousness and will, not making of education a ready-made garment to be slipped off and on. Meantime, Anna's eyes have a hunted look as if she would fain escape. What is preposterous to one may be terribly *real*, fatally real, to another; and her troubled face haunts one.

Correspondence

PROHIBITION FAILURES

VIENNA, AUSTRIA, *April 11, 1911.*

To the Editor of Harper's Weekly:

SIR,—Gladstone once said that "Temperance legislation was necessary to make it easier for people to do right and harder to do wrong." HARPER'S WEEKLY of March 18, 1911, keeps well up to its old-time reputation of making people happy with good reading-matter. Even R. E. Pritchard's rather discouraging report of the non-success of recent prohibition legislation at the South cannot be called unhappy reading for an old prohibitionist; because, as human nature is constituted, this result was not unanticipated by most temperance advocates. Total abstinence principles are plants of slow growth, and many good people of the passing generation, as well as of the present, have not yet been convinced that either public prohibition (or, personal inhibition) of liquor drinking and manufacture would ever stifle intemperance. Many excellent people of the old school, as well as modern "free-livers," do not accept even "total abstinence" principles as necessary to create a temperance community; but think that "moderate drinking" is healthful and best. No prohibitionist expects prohibition enactments (temperance by law) to be fully successful. Especially in cities "prohibition does not prohibit"—*i. e.*, fully *prevent* alcoholism—any more than laws against burglary, arson, pocket-picking, or even murder, fully *prevent* these crimes. But this result does not discourage making good laws to protect society. Prohibitory laws against the manufacture and sale of intoxicants are an educating influence for right living, even in communities like some of our Southern States where public sentiment against intoxicants is not so well developed as in some of our Northern States. Open saloons and alcoholic drink manufactories are not only prohibited in some States and hundreds of counties of our country, but they are, with a few exceptions, well *suppressed*, to the vast benefit of the communities concerned. Every fair man in those States and counties will corroborate the fact that while alcoholic drinking produces poverty and crime, prohibition laws, well enforced, make health, wealth, and greatly lessen crime. An *open* saloon, where our boys and young men learn the habit of drinking and eventually an almost inextinguishable appetite for alcoholic beverages, can be more easily suppressed by prohibitory law than secret club or home drinking or "bootlegging." Grant the fact that it is possible to shut up saloons and the open drink shops and society has won more than half the temperance battle for saving the rising generation. Most men of honor will not break a law made to save our children for a drink of champagne, beer, or whiskey at an open saloon or bar. It could be also readily granted that a brewery or any manufacturer of alcoholic beverages can be and is not only prohibited but suppressed if public sentiment demands its prohibitory law enforced, because a drink factory cannot well be hidden, except in "moonshine" woods. As "eternal vigilance is the price of liberty," so it is necessary everywhere for true total abstinence and prohibition. "Educate, educate, educate" is the only safety of society against intemperance; as also against all vice, crime, evil principles of government, or custom. "Line upon line, precept upon precept" is as necessary for temperance principles as for the gospel of Christianity, humanity, hygiene, or any other good doctrine. Here in Vienna, where from twenty to twenty-five thousand sick fill the score of hospitals, and tuberculosis is rampant, one of the greatest causes alleged for so much disease and misery is *alcoholism*. Although mankind cannot be "*made good*" by law, yet good law does much to develop right thinking and right action in any society. If any reader doubts the vast benefits that "prohibition" produces, let him study Norway and Sweden. Quite recently one of these grand Scandinavian little nations, by a vote, after long years' trial and experience, have by ninety per cent. majority outlawed liquor by strong prohibitory laws. Nowhere can be found a more virtuous, abstemious, and industrious race than the Scandinavians. If any one doubts the force and power of good *law* to reform a nation beset with swarms of beggars and thieves let him come to Munich, Bavaria, and learn how Benjamin Thompson (Count Rumford), a Massachusetts Yankee, one hundred and twenty-one years ago, arrested by wise laws and action from three thousand to five thousand arrant beggars and transformed them into industrious, law-abiding, grateful citizens. A miracle of kind, firm *law!* No beggary since to be found in Bavaria, and no cleaner or more advanced city in Europe than Munich, thanks to law and "Count Rumford." Where State-wide prohibition may be demonstrated to be superior to local option is in the States of Maine and Kansas—Maine enacted State prohibition sixty years ago. The law has been to a greater or less extent well enforced, to the great prosperity and physical and moral health of its inhabitants. This State has saved in that period by its total suppression of liquor manufactories within its bounds about twenty million dollars annually in United States government taxes, or twelve hundred million dollars. From being one of the poorest States in the Union in 1851, it now in proportion to its population is among the richest. Its savings-banks in 1900 had more money than the great license State of Ohio then had, with double population—there are thousands of young people in Maine who have never seen an open saloon or an intoxicated person. Kansas, forty years ago a poor State, after its enactment and enforcement there of its constitutional prohibition, has become a wealthy and comparatively highly moral State. State prohibition is the "*philosopher's stone*" that can transform a drinking community into one of golden prosperity.

I am, sir,

HENRY M. HALL.

Our correspondent, it seems to us, makes no distinction between State prohibition and local option. He sends us to Norway for good liquor laws, but the Guttenberg system was not prohibitory. We wish it could be made to work in this country. He points to Munich as an ideal city—to Munich, renowned for making the best beer in the world. He says State prohibition has made Maine and Kansas prosperous. They are prosperous and they have State prohibition, but they are not prosperous because they have State prohibition.—EDITOR.

A TOMB FOR ALL OUR PRESIDENTS

MANILA, P. I., *March 27, 1911.*

To the Editor of Harper's Weekly:

SIR.—"For a Monument to Cleveland" is the subject of an editorial in your issue of the 18th ultimo. Now that he is so well understood and people will subscribe promptly to the fund for this memorial whatever form it is to take, why not use this opportunity to initiate a movement for a national burying-place for our Presidents.

It should be in Washington and in form a pyramid. An obelisk is already there. But a pyramid would be grander still. The interior should be a huge dome-shaped affair; and facing this each President could have his niche, which would be large and room-like with columns at the sides and the sepulchre in the middle. Behind this sepulchre in the same niche or room could be minor ones for the President's family, but none of these family tombs should be exposed to the front. Napoleon's tomb in Paris gives an idea.

Beginning with the first President, the scheme should continue all around and a second gallery if necessary so as to provide a place for every President as long as the Republic is to last.

There could be no windows to the interior of this edifice, but the question of light is no longer difficult.

Built of reinforced concrete with white granite for the exterior and some six hundred feet high, it can be seen that such an edifice would endure to the very end of time. When all other works of man were gone it would still be there, the burial-place of the American Presidents.

I am, sir,

C. A. SEOANE.

THE INCOME TAX AN INJUSTICE

CLEVELAND, O., *April 29, 1911.*

To the Editor of Harper's Weekly:

SIR,—The income tax is an unconstitutional proposition. It is a method to regulate injustice. The Constitution proposes in its preamble to establish justice. Since justice cannot be established by regulating injustice, the income tax, therefore, must be considered unconstitutional.

I am, sir,

C. A. BOWSHER.

In Mexico

AWAY down south in Mexico,
Hurray, hurray!
They're trying to make their Prexy go
Away, away.
They're shooting up the country 'round
With dumdum bullets by the pound,
High in the air, and underground,
They blaze all day.

Diaz is sitting on his throne,
Hi-um, hi-o!
He seems to think it's all his own—
Ha-ha, ho-ho!
He thinks to sit there safe and firm
All through his sixty-leventh term
Despite the turning of the worm
In Mexico.

There's Insurrectos everywhere—
Trala, tralee!
Except in Mr. Diaz's chair,
Fala, falee!
They're on the roof and on the street,
Like swarming bees their clan you'll meet
Behind each cactus and mesquite
And stingaree.

They're in the kitchen and garage—
Honk-honk, hunk-hunk!
Though Diaz thinks them a mirage,
Kerplink, kerplunk!
He sees 'em everywhere he looks,
In valets, butlers, maids, and cooks,
All, armed with Presidential hooks,
Around his bunk.

And still he says he will not go!
Ha-ha, ha-hum!
He's "Diaz" but not "fias" co—
Trala, tralum!
He simply sits there with a grin,
And cries aloud amid the din,
"DON'T LET THOSE OUTSURRECTOS IN!"
Fee-fo, fi-fum!

HORACE DODD GASTIT.

A GALLERY OF GOLF ENTHUSIASTS

I.—THE LAIRD OF SKIBO

DRAWN BY E. W. KEMBLE

The March of 3,000 Women

THE GREAT PARADE BY WHICH THE WOMEN OF NEW YORK EMPHASIZED THEIR DEMAND FOR VOTERS' POWERS

By Bertha Damaris Knobe

WHAT the cartoonist characterizes as the "petticoat pageant" in New York last week—that splendid spectacle of 3,000 "suffragettes" on parade—was the cleverly contrived advertisement of a militant campaign. It took courage—and $5,000. Its inspiration was Mrs. Harriet Stanton Blatch, whose illustrious mother, Elizabeth Cady Stanton, shared the contumely of calling the first woman's-rights convention in the world sixty years ago.

The parade proved to the women themselves that they are in fine fighting trim. Their tactics, for the present, are to do picturesque performances to impress the man in the street—that politically endowed person who went to the parade to scoff and remained to cheer—and everlastingly to "pester" the unfriendly politician into doing things for woman's suffrage. Indeed, the day of the polite appeal is past, for the "suffragette" has put on the war-paint; and no sooner had the fair paraders furled their brilliant banners than they took the next train to Albany to lay siege to the legislators who had buried their suffrage bill in committee—the same old woman-franchise funeral they have diplomatically conducted for many years.

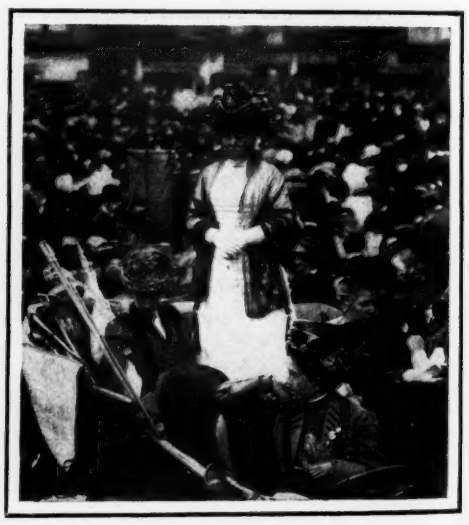
Undoubtedly the representative women who marched to the martial music of five bands down fashionable Fifth Avenue, flanked by tens of thousands of spectators, made a tremendous impression. It was the first big woman's-suffrage procession in America. It brought the curious masculine sex to the curbstone, at any rate; and, excepting the young rowdies who attempted to entangle the ankles of the woman-doctor delegation from Johns Hopkins by throwing ticker-tape into the street, and to interrupt a speaker in one of the fifteen automobiles stationed in Union Square—in each instance the police promptly intervened—there happened none of the ridicule or ribaldry which these pioneer paraders half expected. Curiously enough, the two hundred men in the "husbands' section"—that splendid body headed by Professor John Dewey of Columbia University, Mr. Frederick Nathan, and Mr. James Lees Laidlaw—were hooted from one end of the Avenue to the other. After the parade Mrs. Blatch said, "The real martyrs to-day were the men"—but the men, who were wildly cheered by their wives and sweethearts preceding them in the parade, as they approached Union Square, looked pleased enough with their martyrdom.

The crowd listening to the speakers in Union Square

Speakers in Union Square (left to right): Mrs. Brown, Mme. Gregori, Mrs. Harriet Stanton Blatch

The paraders, practically every one, occupy honored positions in the professions, in philanthropy, and the great industrial world. Perhaps the most notable personage is the Rev. Antoinette Brown Blackwell, nearly ninety years old, who was the first woman minister in America. There were a score of grandmothers, several leading grandchildren by the hand. Two East Side mothers from the tenements trundled their babies in go-carts, and a body of shirt-waist makers, with their banner draped in black, the silent reminder of their comrades who lost their lives in the recent factory fire, struck a sympathetic note. Miss Anne Miller, daughter of Garrett Smith, participated, as did Mrs. Henry Villard, daughter of William Lloyd Garrison, Mrs. John Winters Brannan, daughter of Charles A. Dana, Mrs. Wolston Brown, daughter of Robert Ingersoll. There were Englishwomen who have been in jail; out-West women who have voted for President of the United States; the first woman typewriter; the foremost woman mountain-climber; the first woman civil engineer—in fact, the procession presented, in a picturesque way, the epitome of modern woman.

Miss Milholland, Miss McPike, and Miss Alberta Hill heading the procession with their inscribed banner



Mrs. Fitzgerald speaking after the parade

The division of college girls from Barnard

Mrs. Leigh French in her papier-mache sedan chair

The Social Stride of Washington's Elite

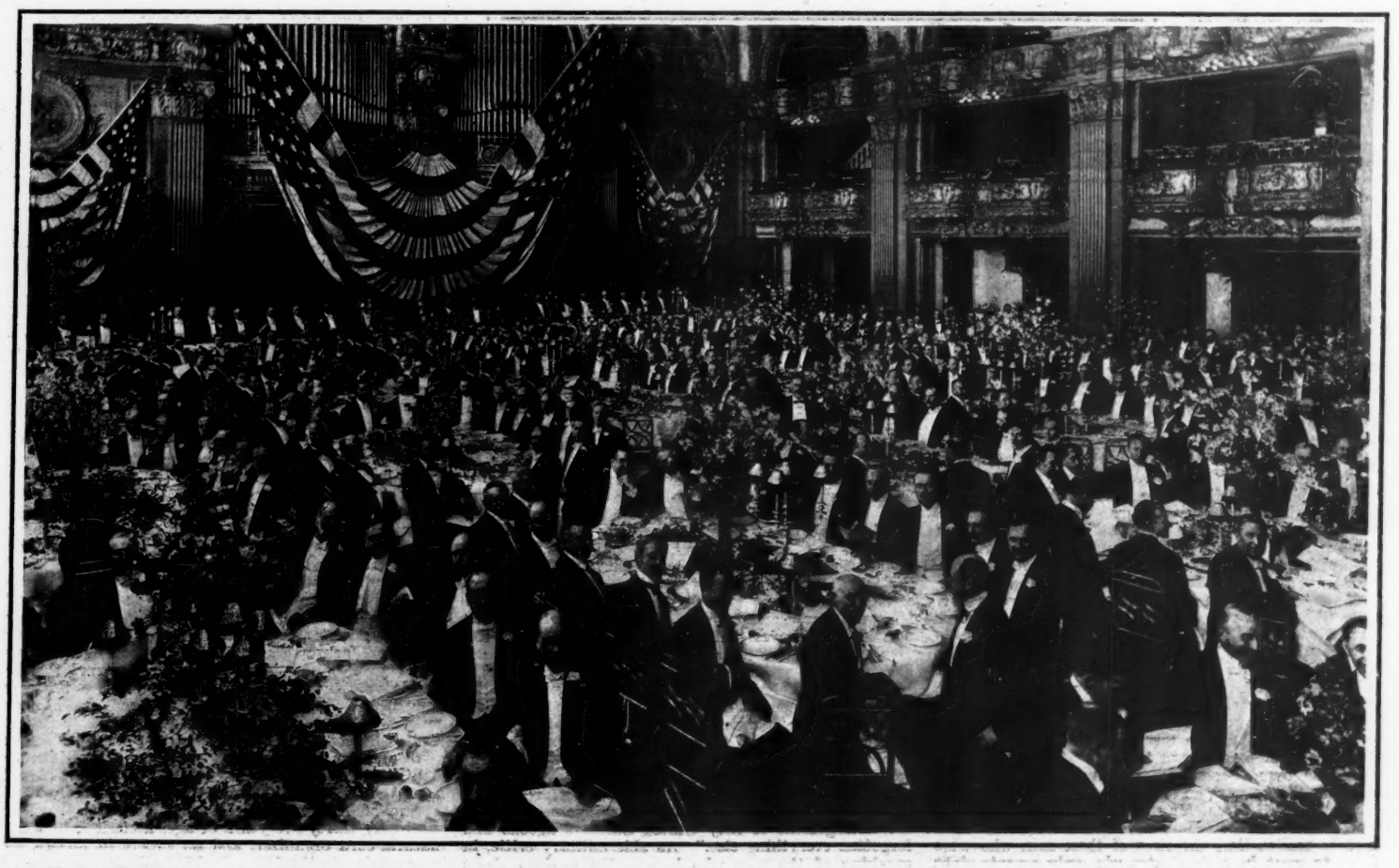
By an English Visitor

IF I were an American it is in Washington. at any rate from October to May, that I would pitch my tent. So far as my experience goes there is no other city in the United States that even begins to approach its extreme and enviable pleasantness. There is a flavor and a distinction about Washington that strike me as altogether its own. To begin with, its conformation. the whole easy elegant scheme of its laying-out, is a delightful relief after the hard angularity of the ordinary American city. Washington is symmetrical, of course, but on so generous a scale that one loses the sense of formality and chessboard artificiality. It is a city such as Euclid might have planned in a mood of poetry or when he had passed his Second Book and had learned to know a curve by sight. Streets and avenues of an incomparable breadth and sweep and shadiness; parks and grassy squares and circles and far-spreading vistas; houses many of them of the most exquisite architecture and each with its little inviting lawn in front; statues that make it incredible to think the people who erected them spoke English—the entire effect is that of a diffused air of spaciousness and large, hospitable design. And every year finds Washington growing a little more finished, a little more beautiful. It is only five years since I was last here, but the improvements, the additions and embellishments that I notice seem innumerable. The impulse that "Boss" Shepherd imparted to the beautification of the capital, so far from petering out, as so many impulses do peter out in America, has gathered force with the years. All America to-day is proud of the capital it so long neglected and is almost feverishly anxious to make it the model city of the continent. And that is what in time it will be. Much no doubt has still to be done—the legacy of seventy years' neglect has not yet been wholly cleared away by the last three decades of constructive effort. But read Tom Moore's biting verses on the capital as he found it in 1814; read Dickens's description, thirty-odd years later, of the avenues that began in nothing and led nowhere, the streets that only needed houses and inhabitants, and the public buildings that only needed a public, to be complete; remember that even after the Civil War, even so late as the early seventies, Washington was three parts mud, with wooden sidewalks, pigs rooting within half a block of the White House, and negroes squatting everywhere—and then see Washington to-day and study the work of the commission that is altering and developing its outward aspects on harmonious and far-reaching lines, and you will not doubt that in another generation it will rank as one of the model municipalities and the most beautiful capitals in the world.

But it is not only or even mainly its appearance and its arrangement that determine an Englishman's partiality for Washington. It is above all else the social atmosphere of the place and the impression it gives one of being the home and workshop of the men who in America are doing the things that are most worth while. Washington, I suppose, can never be to the United States what London is to England, or Paris to France, either in politics, finance, or social or intellectual prestige. Except officially one hardly thinks of it as the capital of the United States, so egregiously is it dwarfed in size, wealth, and commercial and political importance by other cities. It radiates next to nothing. It has no trade and no manufactures and no influence over the arts and letters of the American people. The day is infinitely distant and in all probability will never come at all when every American artist, author, dramatist, and musician will turn instinctively toward Washington. So far as one can see, its fate is to remain forever what it is now, the chief administrative and legislative foundry of the country and the headquarters of scientific research—that and little more. But while it is never likely to attain to the gorgeousness, variety, power, and magnitude of another Paris or London, Washington may fairly be called a capital in something more than a technical sense. It is the one American city I know of in which you can always find some one who can tell you at first-hand what is going on, what is being said and felt, in every part of the Union. From that standpoint Washington may fairly claim to be a condensation of the entire country, a clearing-house for the humanity of the whole continent, and to that extent a veritable capital. It is one of the marks of a veritable capital that it should attract trippers and trippers abound in Washington. You meet them at every turn,—on the "Seeing Washington" motor-cars on the streets, overrunning the lobbies and galleries of Congress, perambulating the White House and all the government departments with the most unaffected air of republican proprietorship. Indeed if one had to pick out the real and not merely the geographical center of the United States, the spot, I mean, where if you only waited long enough, you would be bound sooner or later to meet every American you ever knew or heard of, that spot would be somewhere in Washington, either underneath the Rotunda of the Capitol, or in the dining-room of the Metropolitan Club, or the executive offices attached to the White House, or the huge entrance-hall of the Pennsylvania station.

But the degree of Washington's failure or success in playing the rôle of a genuine capital is a matter of less interest to the casual English visitor than its unique social formation. Washington society, the part that really counts, resembles some small and exquisite piece of embroidery overweighted by a fringe that is neither small nor exquisite. The fringe in question is composed of the negroes, who form a third of the population, the shopkeepers, and retail traders, the clerks in the government offices, about nine-tenths of the Congressmen and their families and friends, about two-thirds of the Senators, including their wives and daughters, and, of course, the entire army of trippers. All these one may safely rule out; Washington society, the real thing, knows them not. What then, in this city of hardly more than 300,000 people, is left? So far as I can make the matter out Washington society is made up of (1) the ambassadors, their families and attachés; (2) the Cabinet heads of the state departments; (3) the Presidential "set"—not so brilliant or interesting at this moment as it was five years ago, but at least as active; (4) the army and navy officers of the higher grades; (5) a group of distinguished men of science in the government service; (6) the judges of the Supreme Court; (7) such Senators as care enough, or are made by their wives to care enough, about society to own or rent a house from November to May; (8) a sprinkling of Congressmen, perhaps twenty in all, who are accepted only after a severe probation; (9) a few dozen of the old residential families; and (10) a colony of the *nouveaux riches*. These last are by way of being a new phenomenon. Fifteen years ago, at any rate, when I first knew Washington it showed few signs of becoming a rich man's city. Nowadays fashion, or at least wealth, seems to be setting in its direction. Mansions that are almost palaces are rapidly rising, and the men who build and own them settle in the capital simply to get a good social return for their outlay. They are not interested in politics or diplomacy; the secret of their presence is merely that they find Washington during the winter and early spring the most agreeable place in America to live in. That is a very interesting development, and one, I imagine, that is likely to grow more and more popular. A few years hence it may be as much the thing to have a house at Washington and spend the winter season there as it used to be to have a cottage at Newport; and I foresee the time when Washington will compete with, and perhaps overshadow, New York as the radiating center for the fashions and follies of the "Smart Set." The equipment of America will then be complete, and the political plutocracy will at last have found its social counterpart.

The feature of Washington that most impresses me, when I look back on my fifteen years of acquaintance with it, is the growing stringency of the code of etiquette. Thus, the number of state dinners and receptions that the President has to give is now definitely fixed. The President nowadays, I understand, never dines out except at a relative's or a Cabinet Minister's house. So much has been settled; but there remains a whole wilderness of social forms still to be subdued. Should Senators, for instance, be given the *pas* over Cabinet Ministers? Should the Admiral of the Navy rank above the Secretary of the Navy? What is the relative position of the Speaker and the Secretary of State? The Vice-President being a sort of heir-apparent, ought ambassadors to follow or precede him? What is the exact place of the Justices of the Supreme Court in the scale of precedence? If two Senators were elected on the same day, which of them should make the first advance? And what about the status of the unmarried daughters of Cabinet Ministers? These and a hundred similar conundrums are debated in Washington with a more than monarchical fervor. The mere fact that they can be propounded shows that the American capital is still somewhat in the chrysalis stage of social development.



SIX HUNDRED BANKERS FROM ALL AMERICA CONSIDER THE NEWEST ASPECT OF THE TRUST QUESTION

AT THE BANQUET OF THE TRUST COMPANY SECTION OF THE AMERICAN BANKERS' ASSOCIATION, HELD AT THE WALDORF-ASTORIA, NEW YORK, ON MAY 5TH, EX-SENATOR NELSON W. ALDRICH, CHAIRMAN OF THE UNITED STATES MONETARY COMMISSION, ADVOCATED THE FORMATION OF THE NATIONAL RESERVE ASSOCIATION, AND DECLARED THAT TRUST COMPANIES WOULD THEREBY REMAIN FREE FROM POLITICAL DOMINATION

Preparing for the Unseen

THE EXCITING SITUATION IN THE NATION'S GREAT CONFLICT AS IT PRESENTED ITSELF TO NORTH AND SOUTH HALF A CENTURY AGO

By James Barnes

IF many thousand citizens, scattered throughout the length and breadth of the country, who have reached the age of seventy and over, would look back to fifty years ago this month of May, and would express their mingled feelings of that hour, the result would show the conditions of the time.

In the North there had been but one man who seemed to have possessed the gift of prophetic insight, and he, even by some of his closest friends, had been regarded as a hothead—a man whose nerves and fears had got the better of him. This was Governor John A. Andrew, of Massachusetts. Because he had foreseen that an appeal to arms was sure to come he had been held up to ridicule—lampooned in the papers as "Our Merry Andrew"—inveighed against for stirring up bitter feelings, inculcating strife, arousing sectional feeling. But when the blow at Sumter came, Massachusetts, whose militia, under the Governor's orders, had been paying "absurd attention" to its drill and military equipment, was the first Northern State ready on the instant to reply to the call. Three thousand armed and equipped members of companies, uniformed and fairly well drilled, answered the bugle.

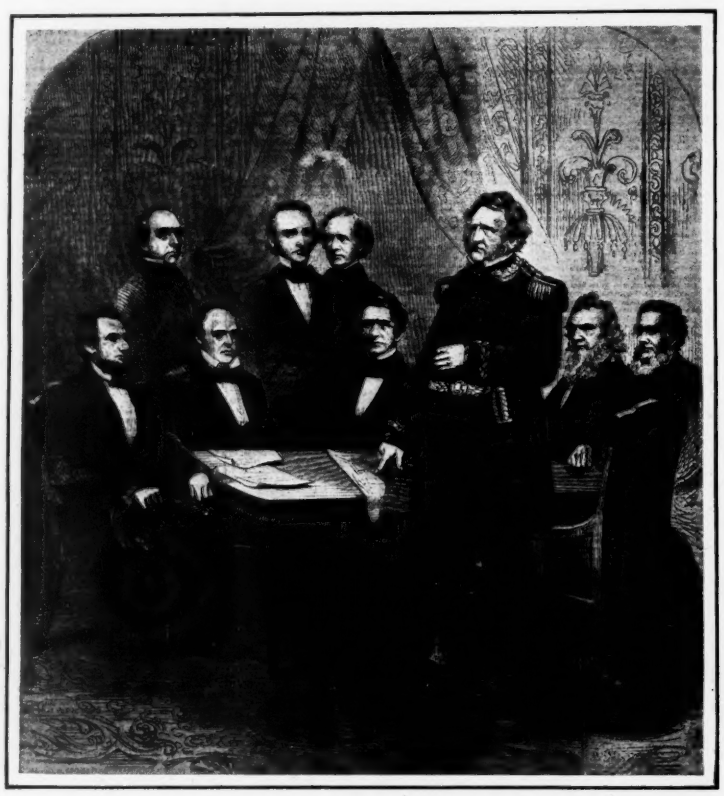
On the very day after Sumter's fall, on April 15th, President Lincoln, hesitating as to the extent of his own powers, asked of the country 75,000 men for three months' service. Within twenty-four hours the Sixth Massachusetts mustered on Boston Common and started to the rescue of the national capital. On the 19th, as these troops passed through Baltimore, occurred the historic riot in the city streets, and the shedding of the first blood of the greatest civil war in history. But who then was so wise as to see what was to follow? Even those who had been planning for months the secession of the South could hardly realize the results of their action. They did not know that it was they themselves who had plunged the knife deep into the vitals of the burning question, slavery, and that they were to be responsible for its final and costly passing out. When we look at the happenings of the last six months of the year of '61, it seems impossible to conceive that out of the phase of unpreparedness, the lacking of everything that marked the month of May, should have arisen the vast plans and preparations to meet immediate requirements and situations that the most visionary of the "hotheads" had failed to forecast. Chaos, uncertainty, distraction, blunders, marked this month of May. Advisers there were in plenty. Washington and the newspapers were filled with their babblings; the capital teemed with political harpies. The change of administration had opened the doors, as usual, under the spoils system, then at its height, to a horde of clamoring office-seekers. President Lincoln had summed up his own position in his own quaint fashion: "The palace is in flames," said he, "but instead of being allowed to put out the fire I must needs attend to applicants for apartments in the burning building." At this time, when decision was necessary, he has been well referred to as "the most and worst advised of men."

But still he must have foreseen the inadequacy of his first call for help. On the 1st of May the President had called again for 42,000 three-years volunteers, 22,000 troops for the regular army and 18,000 seamen.

The South, in her turn, had asked for 100,000 men for six months, but the term soon was lengthened to three years, and afterward to five. The beginning of April had found Secessia weak in resources, but four reluctant States were at length won over—Virginia on April 17th, Arkansas, May 6th, North Carolina, May 20th, and Tennessee fell into line on June 24th. It is hard to realize that the sires of these men who were about to meet in a death-struggle, only seventy-eight years before had completely released themselves from the yoke of Great Britain and had become a nation.

Owing to circumstances, the first decision made by the national government was one the upholding of which, though impossible at the very outset, became at last a reality, and, in the end, the moving factor in bringing the conflict to a close. This was the declaring of a blockade of the Southern seacoasts on April 19th, extending from South Carolina to Florida, and within a week altered so as to include the shores of North Carolina, Virginia, and the Gulf. Many writers and historians of the Civil War, in dealing with the history of campaigns and the results of battles, have almost completely ignored the work of the navy in their summing up. But without prejudice and in all fairness, it must be acknowledged that the blockade and the means (money, men, and ships) to put it into existence gives the answer. The South, if supplied from the outside with her ports of entry free, could have maintained the struggle so indefinitely that the voice of humanity at large would have risen in such volume that the exhausted country, glad to listen, would have thrown down arms, eager to make peace on the best terms possible.

At the head of the national military forces was General Winfield Scott, a veteran of the War of 1812, and the hero of the victorious march to Mexico City. In his prime General Scott, who stood some six feet five, a grand figure of a man, had been referred to as "a walking cathedral," but at the outbreak of the war the cathedral had begun to show the wear and tear of years, and was almost in ruins. Although a Virginian by birth, Scott stood for the Union. At the first it appeared as if mentally he was equal to coping with the intricate problems that were laid before him; it appeared as if a new energy was born within him; his military judgment, when once the conflict started, was sound and his plans and counsels wise. But the infirmities of years soon began to show. It was a day that demanded younger blood; it required men who could live on twenty-four hours a day and answer for each minute. Not only that, but the individual conscience as to duties had to be reckoned with. Out of the 1,200 officers scattered throughout the regular army of 16,000 men many were Southerners—one-fifth of the force who could claim West Point as their *alma mater* handed in their resignations and chose to go with the Confederacy. The aged general felt this defection keenly; the loss of one man came to him as a blow over the heart. When Robert E. Lee felt that Virginia had the strongest claim upon him, the army lost the man that Scott had picked out for his own successor. Many able soldiers remained, but there was not one then in a position of authority who had ever commanded or manœuvered a thousand men in the field. As one West Point graduate, who was soon to be a general, expressed it: "In the old army I had learned all things necessary to the management of fifty United States dragoons and forgotten everything else." An able military critic, in speaking of the men who became the nucleus about which gathered numbers that before the war were counted up in millions, speaks of the West-Pointer as "a good soldier in an elementary sense." Beyond the battalion they had received no training; movements in brigade, in division, in corps, were in no way subjects of study. The volunteers forming everywhere into companies and regiments in both North and South presented absolutely a new element in war. There were many who carried, if not field-marshals' batons, at least general's shoulder-straps, in their knapsacks. During the war, on the Northern side there were one hundred and twenty-eight major-generals, mostly brevetted by Lincoln, after rising through the various grades to brigadier. Of these one hundred and twenty-eight, five are alive to-day. But the West Point training must have been a good start at least, for the great and best-remembered names of both North and South—Lee, Jackson, Longstreet, Johnston, for the Confederacy, and Grant, Sherman, and Thomas, for the North—were West-Pointers.



General Scott's last meeting with Lincoln's Cabinet

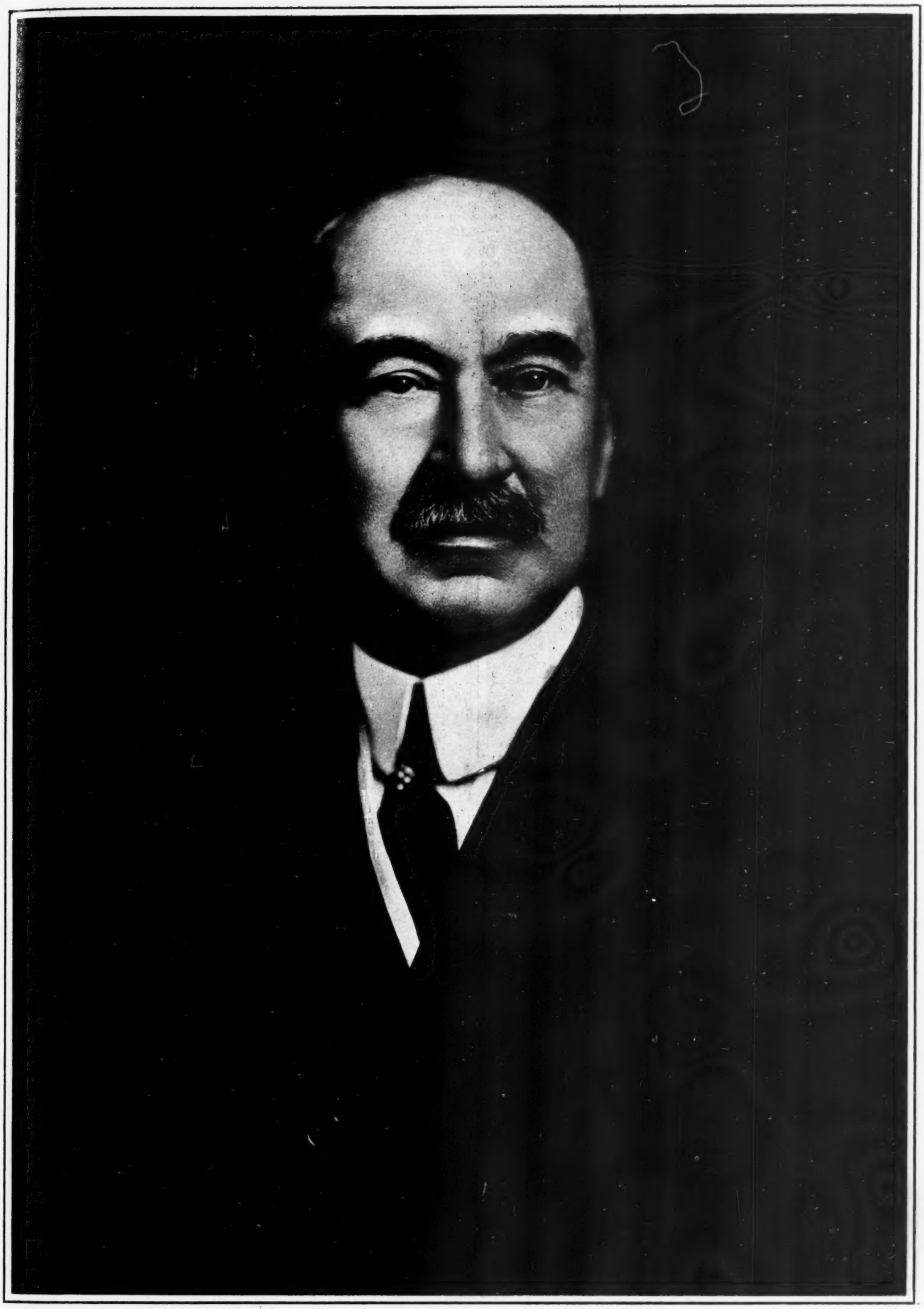
THE FIGURES SHOWN ARE, FROM LEFT TO RIGHT: LINCOLN, SMITH, CHASE, BLAIR, CAMERON, SEWARD, SCOTT, WELLES, BATES

From "Harper's Weekly" of November 16, 1861

The navy that began within a year to show such brilliant efficiency was absolutely unprepared for the work it was called upon to do. The squadron in home waters, in April of '61, comprised but twelve vessels, of which only seven were steamers. The complete naval list numbered ninety, but only forty, and most of them antiquated, were ready to go into commission. The complement in men was only seven thousand. As a writer of the time has put it, "officers abounded, but they were in great part sailors of the old school, deep in the ruts of tradition and of routine, their fire smouldering under their white hair." The Annapolis Academy, founded by George Bancroft, Secretary of the Navy, was but sixteen years old. Many of the ships were scattered on foreign service, some in the South, some on the coast of Africa engaged in suppressing the slave trade. Three hundred and twenty-two naval officers from the South resigned, the majority of them becoming conspicuous in the services they rendered the seceding States. But here let it be put on record that although many captains of vessels with Southern proclivities could have taken their ships into ports and delivered them to the cause they afterward gave up careers and lives for, not one was false to the trust reposed in him. Before resigning they brought their ships and crews home to some Northern port.

Captain Gustavus V. Fox was Assistant Secretary of the Navy. Ably and efficiently he filled the post. It was not his fault that in the contagion of excitement and apprehension of mid-April one of the greatest blunders of the time from a national standpoint took place. This was the destruction of the Gosport Navy-yard at Norfolk, Virginia, on April 20th. The war vessels *Delaware, Pennsylvania, Columbia, Germantown, Merrimac, Raritan, Dolphin,* and *United States,* were scuttled and set on fire. The *Cumberland* was towed out to be sunk afterward by the resurrected *Merrimac,* that, sheathed with armor, and named the *Virginia,* carried consternation through the fleet in Hampton Roads not many months later. Now, under Fox, the government began buying and chartering craft of all kinds, river steamers, barges, tugs, ferry-boats, for it was early perceived that the great waterway of the Mississippi must be controlled, and for the 18,000 men who were to recruit the navy there must be vessels soon at hand. In the South letters of marque and reprisal were offered for ships who were willing to incur the risk of starting for sea. By the seizure and extinguishing of the fire in the Gosport Navy-yard the Confederacy had gained 3,000 cannon, and by the evacuation of Harper's Ferry, Virginia, by the Union forces, Virginia became the richer by vast stores of muskets and munitions.

All the time through this month of May North and South was one vast drill camp, but the troops were raw; they knew nothing of fighting. Their officers knew little of drilling. There was enthusiasm in plenty, but of discipline very little. Many still thought that the trouble would simmer down. The leaders of the Confederacy insisted that the North would not fight. Many people in the North averred that the Confederate States would not dare to—that they could not afford it. But the insistent clamor rose at last almost to hysterical cries for something to be done. "Action, action!" demanded the people. Why all this gathering and recruiting, and nothing being done? Washington was now well protected by ably drawn lines. Generals Charles P. Stone and Irvin McDowell, newmade brigadiers, were assisting Scott at the capital; Scott was soon to retire, in November. Men prominent in politics had turned to military careers, and inefficiency was rife on all sides. Between the new capital of the Confederacy, Richmond, and Washington lay a hundred miles that offered no particular obstacles in the way of mountain chains or impassable rivers, or even in May any armed force that could have made great opposition to the advance of troops. But there were no troops. Nothing as yet but eagerly drilling tradesmen, farmers, college and school boys. The storm center beyond the Mississippi was Missouri. Governor Jackson was a secessionist, and just outside the city of St. Louis on May 10th occurred the first decided movement, when Camp Jackson, a State encampment, where there were stationed the Missouri militia ready to join the South and threatening the United States Arsenal, was seized by the loyalist companies under the direction of Francis P. Blair, Jr., and Nathaniel Lyon. This arresting—for it was hardly more—of Jackson's followers assured the Federal allegiance of Missouri. George B. McClellan, a young man only thirty-five years of age, a student of war, a natural-born organizer, and an expert in tactics, was now coming to the fore. On May 4th he was placed in command of the Department of Ohio, comprising the States of Ohio, Indiana, and Illinois. War was the only word. Thirty-one millions of people were unprepared for the shock, the work, the cost, and the sorrows that lay ahead.



THE HEAD OF THE WORLD'S LARGEST FLOUR-MILL

JAMES S. BELL, THE PRESIDENT OF THE WASHBURN-CROSBY CO., HOLDS SWAY OVER THE MOST EXTENSIVE FLOUR-MILLING CONCERN ON EARTH. HIS PLANT HAS A DAILY CAPACITY OF 45,000 BARRELS, EQUIVALENT TO TWELVE MILLION LOAVES OF BREAD. MR. BELL WAS BORN AT PHILADELPHIA IN 1847, WAS EDUCATED IN THE PUBLIC SCHOOLS OF THAT CITY, AND WORKED UP FROM THE BOTTOM IN HIS FATHER'S FIRM, THE REPRESENTATIVES OF THE WASHBURN-CROSBY CO. IN PENNSYLVANIA. HE ASSUMED THE PRESIDENCY OF THAT COMPANY IN 1889. UNDER HIS ADMINISTRATION THE CAPACITY OF THE MILLS HAS GROWN FROM 10,000 TO 45,000 BARRELS OF FLOUR DAILY.

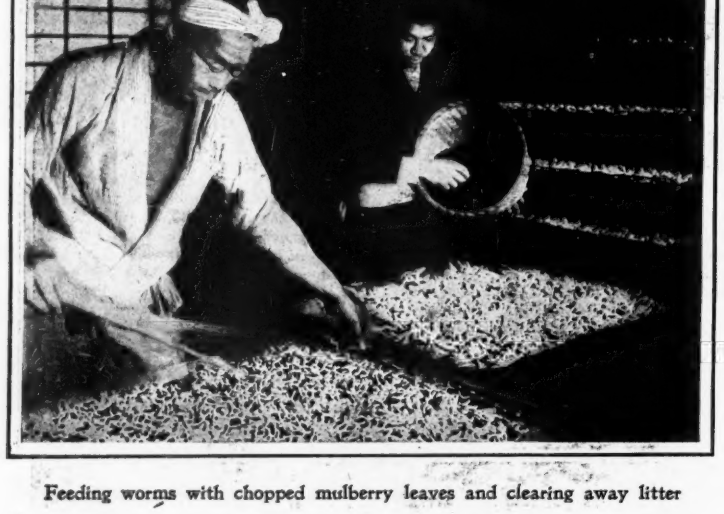
The Story of Silk

SOME INTERESTING FACTS ABOUT "THE GOLD OF TEXTILES"

By Thaddeus S. Dayton

SILK has been the queen of all fibers and fabrics for nearly fifty centuries. It is the gold of textiles. Until modern times, emperors and kings weighed their treasures of silk in the balance with gems and precious metals. In the past twenty years American mechanical skill has perfected the weaving of silk by power-looms and has revolutionized most of the processes of its manufacture. The changes wrought in these two decades have brought silk fabrics within the reach of those who are comparatively poor.

Silk is one of the most sensitive of the great barometers of trade. The silk business is the first to feel the breath of far-off financial tempests and the first to revive after the storm has passed. The prosperity of nations may be judged from their consumption of silk. The United States is the greatest consumer of raw silk in the world. It manufactures about half of all that is produced and exports very little. On the other hand, we imported about $40,000,000 worth of manufactured silk from France and other countries last year. More raw silk is sold annually in New York City alone than is bought by all France, which until lately led in the silk industry. About $125,000,000 is invested in silk manufacture in the United States. The value of the product of American looms last year was nearly $150,000,000. We annually expend as much for silk goods as we do for public education and thirty times as much as for foreign missions.



Feeding worms with chopped mulberry leaves and clearing away litter

In point of age the discovery of silk stands midway among the great textiles. Wool and cotton preceded it, while flax, hemp, and other fibrous plants began to be used a few centuries later.

The silkworm is one of the most hideous objects in animated nature, but it has been an indomitable producer of wealth for so many centuries that we cannot grasp the lapse of time. The Chinese were weaving silken tissues when the Shepherd Kings invaded Egypt. The first record of the silkworm which has played so large a part in the history and development of nations, is found in Chinese history. According to the ancient chronicles, the Empress Si-ling-Chi, walking one day in the palace gardens, chanced to see a strange and repulsive-looking worm of a pale green color feeding on a mulberry leaf. Her curiosity was aroused and she returned and watched it day after day, until it had spun its silken prison. She told the Emperor of this curious creature and suggested to him that she test the practicability of weaving the gossamer threads with which it had enshrouded itself. He assented, and the Empress collected a number of these worms and fed them in a specially prepared place. For months she pursued her studies and experiments. She discovered not only the best means of rearing silkworms, but also the manner of reeling the silk and using it for textile purposes. This was about 2650 B.C., and from that day to this the Empress Si-ling-Chi has been known in China as the "Goddess of the Silkworms." Each year the Chinese hold a celebration in her honor during the season in which the silkworm eggs are hatched.

For nearly thirty centuries silk-culture was one of the cherished secrets of China. In the beginning the gorgeous fabrics that were produced were used only for royal robes, but before half a century had gone by the silken stuffs of China became articles of export to various portions of Asia. For three thousand years great caravans plodded across the continent to Persia, the gateway to the West, loaded with their precious bales. The Persian traders sold the silk of China to Syria, Egypt, and Greece. So well did the Chinese guard their secret that the origin of silk was not known to the Western world until the middle of the sixth century. The Greeks and Romans thought it was either "a fleece which grew upon a tree" like cotton or a fiber obtained from bark or the product of some plant or flower.

The discovery of the secret came opportunely and unexpectedly. About 550 A.D. the Emperor Justinian was at war with Persia. Long before then vast quantities of raw silk had been coming from China and its manufacture had become an important industry in the Byzantine Empire. All of it passed, as it had for centuries, through Persia. This war cut off the supply and threw the manufacturers into great distress. Just when this industrial crisis was at its height two Nestorian monks appeared in Constantinople. They had spent several years in China and had obtained a thorough knowledge of the long-guarded secret of the Chinese method of rearing worms and weaving the silk. The penalty for taking silkworm eggs out of China was death, but Justinian bribed the monks to return to that country. Five years later they came back, bringing with them a quantity of these precious eggs concealed in their pilgrim's staffs. From these eggs, which were brought to Constantinople nearly fifteen centuries ago, practically all the silkworms in the Western world are descended.

Three hundred years before that a descendant of a Chinese emperor fled to Japan, carrying with him a few of these precious eggs, which were the price he paid for peace and a refuge from his pursuers. This was the beginning of sericulture in Japan. The Moors brought the silkworm to Spain in the tenth century, and from there silk-culture soon extended to Greece and Italy. In France it began three hundred years later.

The first attempt at rearing silkworms in America was in 1624, in the colony of Virginia, but sericulture never has been successful in this country. Every one of the countless efforts to foster the raising of silk here has failed, for the simple reason that the cost of labor for producing reeled silk in Europe is from eight to twenty-five cents per day and in Asia as low even as two cents per day—a competition that it has been impossible to meet.

Silk is a unique thing, because its raw material is produced by the cheapest labor in the world, while its finished product is among the most costly of merchandise.

But although the raising of silk in this country has been a failure, its manufacture has grown with such rapidity in the last sixty years that the demand has caused the annual raw-silk supply of the world to increase two and a half times since 1870 and to double since 1875. Since 1890 the raw silk production has increased sixty per cent. and since 1895 nearly fifty per cent.

The first power silk-mill in America was built by Rodney Hanks in 1810. It was in a frame building twenty feet long by fifteen wide in the little hamlet of Mansfield, Connecticut. A swift-running stream furnished ample power for this infant industry. The mill is still standing, and the business then established is now carried on by a grandson of the founder. There are now about seven hundred establishments for the manufacture of silk in the United States. These employ more than 100,000 men, women, and children, who receive about $40,000,000 a year in wages. New Jersey leads in the number of silk-mills, with Pennsylvania second and New York third. The silk city of America is Paterson, New Jersey, whose first mill was established in 1840. There are more than three hundred silk-mills in Paterson now. They employ 40,000 men and women. The value of the annual product of these mills is more than $30,000,000.

The beginning of the silk is the worm. The silkworm is cultivated principally in China, Japan, India, and southern Europe. No one knows how much raw silk China produces or consumes itself, but it exports nearly thirty million pounds each year, which is almost double the amount of Japan, which is its closest competitor.

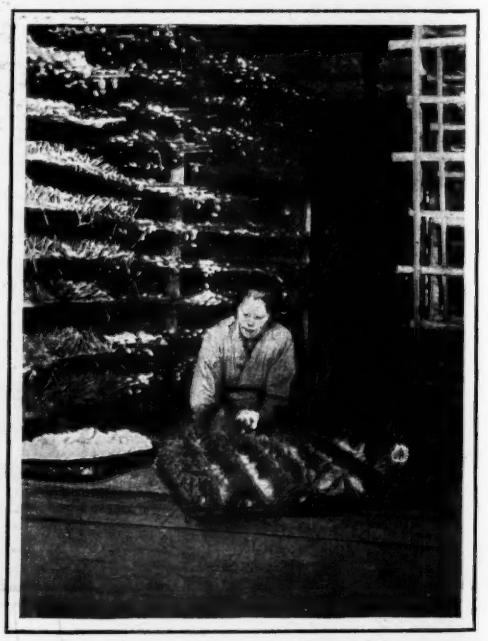
There are four stages in the development of the silkworms—the eggs, the larva, the chrysalis, and the moth. From birth to death its span of life is barely fifty days. The egg is slightly oval in shape and is about the size of a turnip seed. One moth will lay about 400 eggs and it takes 40,000 eggs to weigh an ounce. Each egg has a small spot in one end, and when the worm hatches, which in temperate climates is about the first of June, it gnaws a hole in this spot. When first deposited the egg is of a yellowish color, which turns to gray, slate, lilac, violet, or dark green, according to the variety of the worm. Through natural and artificial selections for many centuries a large number of varieties have been established. These have been classified into three distinct groups: those that produce one brood of eggs per year, those that produce two, and those laying three or more annually.

When the worm is hatched it is black in color and scarcely an eighth of an inch in length. It is covered with long hair and has a shiny nose. It has four molting seasons, and, like other caterpillars, abstains from food for some time before each change. In molting the old skin breaks at the nose, the head is pushed out, and the worm by wriggling and twisting gradually works the old skin back from segment to segment until it is entirely cast off. As it grows older and larger the silkworm becomes lighter in color, until it is almost cream white. Each change gives the worm an insatiable hunger, and it feeds ravenously upon the leaves of the mulberry. When several thousand worms are eating they make a noise like the pattering of a shower of rain.

In about forty days the worm is full grown and is ready to spin its cocoon. It is then about three inches long and has increased in weight ten thousand times since the day of its birth. It climbs up from the feeding-tray to the branches placed above it and crawls about restlessly, peering here and there for a suitable twig on which to begin its spinning. It loses its appetite and shrinks nearly an inch in length. Once it has decided upon its resting-place, it throws out silken guy-lines so as to secure the cocoon in place most effectually. Then it commences to form itself in a loose envelopment of silken fibers, gradually enwrapping itself in a much closer covering and forming an oval ball about the size of a pigeon's egg, which is called a cocoon. The silken threads which it spins are elaborated in a semi-fluid condition in two long, convoluted vessels inside the worm. As these vessels approach the head they grow more slender and finally unite within the spinneret, a small orifice below the mouth, from which the silk issues in a glutinous state, the two threads appearing as one.

The motion of the worm's head in starting the cocoon is very rapid and nine to twelve inches of silk flow from the spinneret in a minute. Later the average is about half this amount. The cocoon consists of two parts: first, the outer lining of waste silk, which it spins in getting its bearings, and, secondly, the inner cocoon, which is a strong and compact mass composed of a firm and continuous thread. This thread is not wound round and round the cocoon, but is laid in short figure-eight loops, first in one place and then in another. When the cocoon is unwound several yards of silk may be taken off without turning it. The worm makes sixty-five elliptical motions of its head in a minute, or a total of three hundred thousand in an average cocoon, which takes from four to five days to construct.

The Chinese cocoons are usually white or yellow, varying from pure white to pure lemon-color. Those of Japan are of a pale green, those of Turkey pure white, and those of France, Italy, and Spain are white or yellow.



Removing cocoons from straw beds

As soon as the worm is in its chrysalis state the cocoons, except those intended for breeding, are collected and stifled in a steam-heater. If the moths were allowed to emerge they would break so many

threads that the cocoons would be ruined for reeling. After destroying the vitality of the chrysalis, the cocoons are sorted into different grades according to quality. In the best cocoons the silk thread formed by the worm will measure from 1,000 to 1,300 feet in length.

The outer layer of the cocoon—the silk spun by the worm in first getting its bearings—is loose and is known as "floss." Spun silk is made from this waste. In working spun silk no effort is made to use the continuous thread as spun by the silkworm, but it is treated as a bundle of fine fibers, like wool or cotton, and is spun by textile machinery that is especially adapted to it.

The continuous thread in the core of the cocoon is so fine that if it were unwound and reeled separately it would be totally unfit for manufacture. The process of reeling is a most painstaking one. In Japan and China silk is still reeled by hand in many places, but where large areas are devoted to silk-culture the reeling is done by machinery of European invention which the Orient has adapted to its own requirements. A full or technical description of this or of any of the other stages of the manufacture of silk would fill a good-sized volume in each case. Briefly the reeling is done in this way:

In order to separate and pick out the thread ends the cocoons are first placed in a basin of hot water, which softens the gum that holds the threads together. Then the requisite number of thread ends are collected, run through a guide, and wound on a reel. As the silk cools and dries the gum hardens again, binding the filaments from the different cocoons in one smooth thread, which varies in size according to the number of cocoons from which it is drawn. The finest sizes reeled are not much coarser than a spider-web. They run 491,000 yards—or 297 miles—to the pound. Silk is seldom reeled coarser than about 150,000 yards to the pound. It is put in the form of hanks or skeins, each 400 French ells—476 meters—520 yards in length. Then to make handling and shipping easy, after the skeins have been reeled into standard lengths, both ends of the thread on the skein are marked so that they can be found easily. After the silk has been dried the skeins are made up into bundles of five, pressed into the smallest compass practicable, and put into a tough, smooth, water-proof paper cover. From twenty-eight to thirty-two of these packages are put in a cloth bag and tied with ropes. Another covering of oiled paper is put on, and the whole is wrapped in matting, sewed, and bound. It is in this form that the silk from the Orient reaches the United States.

When the silk goes into the storage warehouse it is "conditioned." Silk is one of the greatest absorbents of moisture, no matter how carefully it is packed. It is sold by weight. Therefore, samples are taken from each bale and are dried until they contain not more than ten per cent. of moisture. The net weight of the silk in the bale is thus determined.

The silk-mill of the present day marks one of the greatest industrial developments of America. Some of these mills with their collateral buildings form great industrial communities. There are seven separate divisions in the manufacture of silk: throwing, dyeing in the skein, winding, weaving, dyeing in the piece, printing, and finishing.

When the silk is brought from the storage warehouse to the mill it first goes to the "throwster"—from the old Anglo-Saxon word *thrawan*, meaning to turn or twist. The raw silk is too fine for ordinary use, and it is the throwster's task to wind, clean, double-twist, rewind, and reel it into more substantial yarn. The throwster converts it into singles, tram, or organzine—names which designate the various purposes for which it is to be used.

The single is made by giving the single thread a twist which makes it strong and firm. Singles are used for warps (threads running lengthwise of the fabric) and sometimes for the cross-threads called filling. Singles are also employed in the manufacture of goods woven with the gum in the silk and afterward boiled out and dyed—"piece dyed" is the trade-name.

The tram is made of two or more turns to the inch—just enough to hold. The degree of twist varies according to the special article that is to be made. Tram is used for the filling of either yarn or piece-dyed goods and sometimes for their warps.

Organzine is formed of two or more singles, according to the thickness required. They are twisted together usually in a contrary direction to that of the singles. The organzine is then reeled into skeins for dyeing.

The last process before reeling is stretching. The machine that does this is an American invention of great value to sewing-silk manufacturers. Stretching evens up the thread and gives it firmness and uniformity of size. Singles, tram, organzine, sewing-silk, and machine-twist are then transferred to a reel and made into skeins for dyeing.

The dyer boils the skeins in soap and water to free them from any remaining gum and to give the desired softness and luster. This takes away from the silk from twenty to thirty per cent. of its original weight, leaving on an average twelve ounces of pure silk out of a pound of raw. Next it is put into the dye vat. Here is where the adulteration, or "weighting," of the silk is done if at all. Proper dyeing alone adds about ten per cent. to the weight, producing what are called "pure dye" silks. But by dipping again and again in the heavy metallic dyes the dyer can add as much as seventy-five per cent. in weight. Sometimes there is even more "weighting" than silk.

The "weighting" is chiefly done in black or dark-colored silks. Light colors do not bear so much weighting. Most of them, in fact, admit of no such adulteration, which injures and weakens the texture. Any silk, if heavily loaded, will break easily, feel rough to the touch because of the particles of dye, and burn smoulderingly into a yellow, greasy ash instead of a crisp cinder. Small holes appearing in new fabrics are caused by weighting.

Peasants reeling raw silk over charcoal braziers

The consumer who buys and wears the silk cannot distinguish the "weighted" from the pure article. It is said that without a chemical analysis even an expert cannot figure how much a silk is weighted. There is at present an agitation in the silk trade to bring about the marking of all silk to show its degree of purity, so that the innocent consumer may be able to buy silk with some degree of intelligence. It is pointed out that, while there are conditions when the adulteration is not harmful, when the wear is not essential, a law of this kind would greatly increase the standards of quality.

After the silk is dyed it is known as "soft silk." It is then wound on spools, an operation requiring much skill and care. After the "soft-silk winder" has finished with it, sewing and embroidery silk and machine-twist are spooled or skeined for market. The other silks are then ready for weaving broad goods, ribbons, braids, sashes, handkerchiefs, and articles of this character.

In its essential elements every woven fabric consists of a warp and a woof or filling. These are two systems of threads, the former running lengthwise of the cloth and the latter crossing at right angles alternately under and over. This interlacing is called the weave. There is no limit to the ways in which the points of crossing can be arranged. In connection with the material used, the tension of the threads, and the combination of colors, it is chiefly the weave which gives character to the fabric.

The three foundation weaves are called taffeta, serge, and satin. In these foundation weaves each thread effects only one crossing in one repeat of the weave, and the points of the interlacing occur in a given rotation. A repeat in the foundation weaves comprises the same number of warp threads as of filling threads. If this number be eight, for instance, the weave is called an "eight-shaft" or an "eight-harness" weave. In the old looms twelve shafts were the limit, but in modern ones of lighter and simpler construction a repeat of twenty-five shafts can be made, while in the filling it is almost unlimited.

The finest grade of velvet is woven by looping the warp thread over fine wires which give by their size the desired length of pile. When the weaver has made a few inches of web, requiring several hundreds of these wires, he stops the loom and cuts the tiny loops by running a knife through a groove along the wires. Other grades are made by the power-loom. Two cloths are woven together, the pile binding the two until a knife, working like a shuttle, cuts them apart. Velvets are afterward brushed, sheared, and ironed to the finest possible degree of evenness.

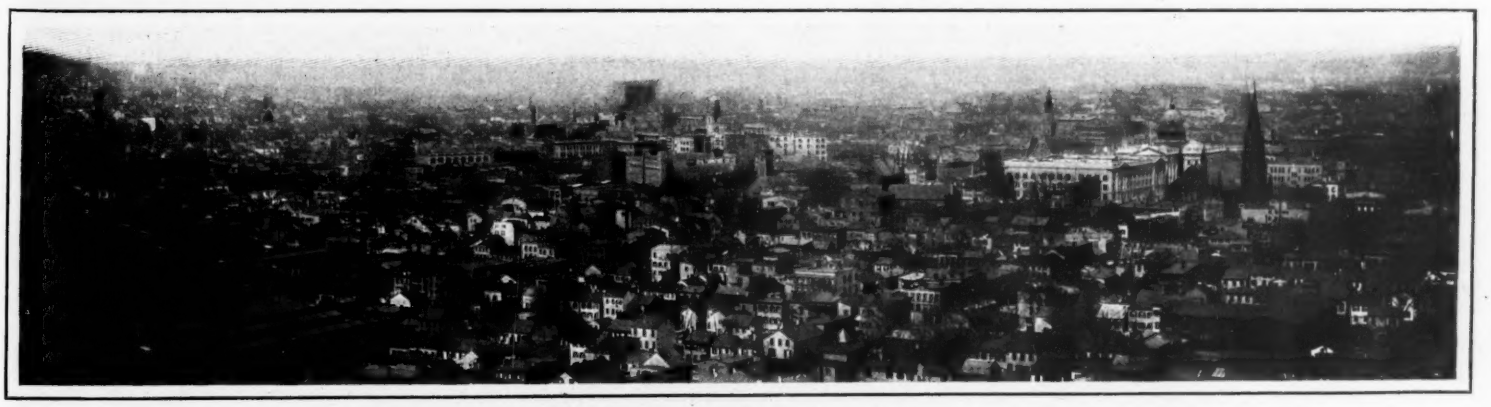
Practically all figured or brocaded goods are still woven by the Jacquard loom, a machine invented by Joseph Marie Jacquard, of Lyons, France, about 1800, but so much improved by American ingenuity that not much more than the name now is left of the original invention. Jacquard's discovery did not attract general notice until 1804, when he appeared before Napoleon as a man persecuted by his fellow-workmen in Lyons because he had invented a contrivance for tying a knot in a taut string. Napoleon found time to give him a hearing, examined his apparatus, appreciated his ingenuity and placed him in charge of the machinery of the Conservatoire des Arts et Métiers.

Before the time of Jacquard the weaving of figured silk was a complicated task. For scores of centuries it had taxed the patience and the pains of the workmen. The loom that had been used for two hundred years before Jacquard's time required the constant attention of at least two workmen, and it was a heart-breaking task to fix or unfix the silk on the frames. The weaving was tedious. Jacquard's loom needed only one man. It was an appendage to the old loom, or an ordinary loom with a modified harness consisting of a set of strings, one for each of the warp threads, every string suspended from a bearing at the top. A pattern could be worked out by cards pierced with round holes. The greatest part of Jacquard's ingenuity lay in the cards, for through them any number of patterns could be produced. With the addition of some minor inventions in other divisions of the industry the manufacture of silk by hand-looms went on for the next half-century without any radical change.

Power-loom weaving was the next great advance which revolutionized the industry. The really efficient power-loom dates back only about twenty years. Even in the past ten years more progress has been made in improved machinery than in the thirty preceding. The modern power-loom of to-day is equipped with mechanical devices that save time, labor, and material. Most of these work automatically. The Jacquard loom has been so improved that it is almost a new loom. This is especially noticeable in the saving of cards and the increase in speed.

There have been many changes in the development of the ribbon-loom also. The first of these looms were of Swiss or German invention, but American genius has taken hold of them and improved them as it did the Jacquard. In fact, the modern high-speed ribbon loom was first designed in the United States. Under the old methods of handling the warp only men could work on the looms. Now the warp is placed on beams similar to those of the broad-silk looms. Every warp is let off automatically from each beam, making it unnecessary for the weaver to go behind the looms for this purpose.

The value of the silk produced in America in 1910 was nearly one hundred and fifty times greater than in 1850. There were but sixty-seven establishments engaged in the manufacture of silk goods then; there are about seven hundred now. In 1850 the imports of raw silk totaled only 120,000 pounds; last year they were more than twenty times as much. The manufactured silk that is imported now is confined to the costliest fabrics in broad silks, to fashionable novelties, and to church vestments and specialties not suitable for mechanical weaving. The total value of these imports has increased but fifty per cent. in sixty years.



Paterson, "The Silk City of America"

THERE ARE MORE THAN THREE HUNDRED SILK MILLS IN PATERSON, EMPLOYING 40,000 MEN AND WOMEN, AND TURNING OUT AN ANNUAL PRODUCT OF SILK VALUED AT $30,000,000

THE LONELY ONE

By Edgar Wallace
Illustrated by Gordon Grant

MR. COMMISSIONER SANDERS had lived so long with native people that he had absorbed not a little of their simplicity. More than this, he had acquired the uncanny power of knowing things which he should not and could not have known unless he were gifted with the prescience which is every aboriginal's birthright. He had sent three spies into the Isisi country—which lies a long way from headquarters, and is difficult of access—and after two months of waiting they came back to him in a body bearing good news.

This irritated Sanders to an unjustifiable degree.

"Master, I say to you that the Isisi are quiet," protested one of the spies, "and there is no talk of war."

"H'm," said Sanders, ungraciously; "and you?" He addressed the second spy.

"Lord," said the man, "I went into the forest to the border of the land, and there is no talk of war. Chiefs and headmen told me this."

"Truly you are a great spy," scoffed Sanders; "and how came you to the chiefs and headmen? And how did they greet you? 'Hail! secret spy of Sandi?'—huh!"

He dismissed the men with a wave of his hand and, putting on his helmet, went down to the Haussa lines, where the blue-coated soldiers gambled in the shade of their neat white barracks.

The Haussa captain was making a potable medicine with the aid of a book of cigarette papers and a six-ounce bottle of quinine sulphide.

Sanders observed his shaking hand and clucked irritably.

"There's trouble in the Isisi," he said. "I can smell it. I don't know what it is—but there's devilry of sorts. How many men have you got?"

"Sixty, including the lame 'uns," said the Haussa officer, and swallowed a paperful of quinine with a grimace.

Sanders tapped the toe of his boot with his thin ebony stick, and was thoughtful.

"I may want 'em," he said. "I'm going to find out what's wrong with these Isisi people."

By the little river that turns abruptly from the River of Spirits, Imgani, the Lonely One, built a house. He built it in proper fashion, stealing the wood from a village five miles away. In this village there had been many deaths owing to the sickness, and it is the custom on the Upper River that whenever a person dies the house wherein he died shall die also.

No man takes shelter under the accursed roof whereunder his spirit sits brooding: his arms are broken and scattered on his shallow grave, and the cooking pots of his wives are there likewise.

And by and by, under the combined influences of wind and rain, the reed roof sags and sinks, the door-posts rot, elephant grass, coarse and strong, shoots up between crevices in wall and roof, then come a heavier rain and a heavier wind and the forest has wiped the foul spot clean.

Imgani, who said he was of the N'gombi people and was afraid of no devils—at any rate of no Isisi devils—stole door-posts and native rope fearlessly.

He stole them by night when the moon was behind the trees, and mocked the dead spirits, calling them by evil and tantalizing names. Yet he went cautiously to work, for while he did not hold spirits in account, he was wholesomely respectful of the live Isisi, who would have put him to death had his sacrilege been detected, though strangely enough death was the thing he feared least. So he stole accursed supports and accursed roof-props, and would have stolen the roofs as well but for the fact that they were very old and full of spiders.

All these things he came and took, carrying them five miles to the turn of the river, and there at his leisure he built a little house. In the day-time he slept, in the night he trapped beasts and caught fish, but he made no attempt to catch the big bats that come over from the middle island of the river, although these are very edible and regarded as a delicacy.

One day just before the sun sank, he went into the forest on the track of zebra. He carried two big hunting spears such as the N'gombi make best, a wickerwork shield, and on his back, slung by a strip of hide, a bunch of dried fish he had caught in the river.

A man of little height was Imgani, spare of build but broad of shoulder. His skin shone healthily and his step was light. As he walked you saw the muscles of his back ripple and weave like the muscles of a well-trained thoroughbred.

He was half an hour's journey within the forest when he came upon a girl. She was carrying a bundle of manioc root on her head and walked gracefully.

When she saw Imgani she stopped dead, and the fear of death and worse came in her eyes, for she knew him to be an outcast man with no tribe and no people. Such men are more dreadful than the *Ingali* who rears up from the grass and plunges his poison fangs in your leg.

They stood watching each other, the man leaning with both hands on the spear, his cheek against them, the girl trembling.

"Woman, where do you go?" said Imgani.

"Master, I go to the village which is by the river, this being the path," she stammered.

"What have you there?"

"Manioc for bread," she whispered, thickly.

"You are a root-eater," said Imgani, nodding his head.

"Master, let me go," she said, staring at him.

Imgani jerked his head.

"I see you are afraid of me, yet I want nothing from you," he said. "I am Imgani, which means The Lonely One, and I have no desire for wives or women, being too high a man for such a folly. You are safe, for if I wished I would fill this forest with the daughters of chiefs, all very beautiful, all moaning for me."

The girl's fear had disappeared and she looked at him curiously. Moreover she recognized that there was truth in his claim of austerity. Possibly she was a little piqued, for she said, tartly enough, employing an Isisi proverb: "Only the goat bleats at the mouth of the leopard's cave—the Isisi grow fat on strangers."

He looked at her, his head cocked on one side.

"They say in the lower country that the Isisi sell men to the Arabi," he said, musingly; "that is bad talk; you may go."

With another jerk of his head he dismissed her.

She had gone some little distance when he called after her.

"Root-eater," he said, "if men ask you who I be, you shall say that I am Imgani, The Lonely One, who is a prince among princes: also that I have killed many men in my day, so many that I cannot count them. Also say that from my house, which I have built by the river to as far as a man can see in every way, is my kingdom, and let none stray thereon except to bring gifts in their hands, for I am very terrible and very jealous."

"Lord," said the girl, "I will say all this," and she went half running in the direction of the village, leaving Imgani to continue on his way.

Now this village had many young men eager to please the girl who carried manioc, for she was a chief's daughter, and she was moreover fourteen, a marriageable age. So when she came flying along the village street, half hysterical in her fear, crying, babbling, incoherent, there was not wanting sympathy or knights valiant to wipe out the insult.

Six young men with spears and short swords danced before the chief and the chief's important daughter (how important she felt any woman of any race will tell you), and one of them, E'kebi, a man gifted with language, described from sunset to moonrise, which is roughly four hours, exactly what would happen to Imgani when the men of the Isisi fell upon him. How his eyes would shrivel as before a great and terrible fire, and his limbs wither up, with divers other physiological changes which need not be particularized.

"That is good talk," said the chief. "Yet since Sandi is our master and has spies everywhere do not shed blood, for the smell of blood is carried farther than a man can see. And Sandi is very devilish on this question of killing. Moreover, this Lonely One is a stranger, and if we catch him we may sell him to the Arabi, who will give us cloth and gin for him."

Having heard all this they sacrificed a young goat and marched. They came upon the house of Imgani, but the Lonely One was not there, for he was trapping beasts in the forest, so they burned his house, uprooted his poor garden, and, being joined by many other Isisi people who had followed at a respectful distance, lest Imgani's estimate of his own prowess were justified by results, they held high revel until of a sudden the sun came up over the middle island and all the little stars in the sky went out.

Imgani saw all this, leaning on his spears in the shadow of the forest, but was content to be a spectator.

For, he reasoned, if he went out against them they would attempt to kill him, or beat him with rods, and that his high spirit could not endure. He saw the flames lick away the house he had built with such labor.

"They are foolish people," he mused, "for they burn their own, and perhaps the spirits of the dead will be displeased and give them boils." When all that was left of his habitation was a white heap of ash, a dark red glow, and a hazy wisp of smoke, Imgani turned his face to the forest.

All day long he walked, halting only to eat the fish he carried, and at night-time he came upon another Isisi village which was called O-fari. He came through the village street, with his shoulders squared, his head erect, swinging his spears famously.

He looked neither to the left nor to the right, and the villagers crowding to the doors of their huts put their clenched knuckles to their mouths and said, "O ko!" which meant that they were impressed.

So he stalked through the entire length of the village, and was making for the forest path beyond when a messenger came pattering after him.

"Lord," said the messenger, "the capita of this village, who is responsible to the government for all people who pass, and especially for thieves who may have escaped from the village of Irons, desires your presence, being sure that you are no thief, but a great one, and wishing to do honor to you."

Thus he recited, and, being a peaceable man who had been chosen for the part because he was related by marriage to the principal wife of the chief, he kept a cautious eye on the broad-headed spears and determined the line of his flight.

"Go back to your master, slave," said Imgani, "and say to him that I go to find a spot of sufficient loneliness where I may sleep this night and occupy myself with high thoughts. When I have found such a place I will return. Say also that I am a prince of my own people, and that my father has legions of such quantity that if every fighting-man of that legion were to take a handful of sand from the bottom of the river, the river would be bottomless: also say that I am named Imgani, and that I love myself better than anything has loved itself since the moon went white that it might not look like the sun."

He went on, leaving the messenger filled with thought.

True to his promise Imgani returned.

He came back to find that there was a palaver in progress, the subject of the palaver being the unfortunate relative by marriage to the chief's principal wife.

"Who," the chief was saying, "has put shame upon me, being as great a fool as his cousin my wife."

"Master," said the poor relation humbly, "I entreated him to return, but he was a man of great pride, and moreover impatient to go."

"Your mother was a fool," said the chief, "her mother also was a fool, and your father, whoever he was—and no man knows—was as great a fool."

This interesting beginning to a crude address on hereditary folly was interrupted by the return of Imgani, and, as he came slowly up the little hillock, the assembly took stock of him from the steel square razor stuck in his hair to the thin bangles of brass about his ankles.

The chief, a portly man of no great courage, observed the spears, noting that the hafts were polished smooth by much handling. "Lord," said he, mildly, "I am chief of this village, appointed by the government, who gave me a medal to wear about my neck, bearing on one side the picture of a great man with a beard, and on the other certain devil marks and writings of vast power. This was given to me that all people might know I was chief, but I have lost the medal. None the less I am chief in this village as this will show." He fumbled in the bosom of cloth and brought out a bag of snake skin, and from this he extracted a very soiled paper. With tender care he unfolded it and disclosed a sheet of official note-paper with a few scrawled words in the handwriting of Mr. Commissioner Sanders. They ran:

"To all sub-commissioners, police officers, commanders of Haussa posts. Arrest and detain the bearer if found in any other territory than the Isisi."

There was a history attached to this singular document. It had to do with an unauthorized raid upon certain Ochori villages and a subsequent trial at headquarters, where a chief, all aquiver with apprehension, listened to a terse but intelligible prophecy as to

what fate awaited him if he put foot out of his restricted dominion.

Imgani took the paper in his hand and was interested. He turned it about, rubbed the writing lightly with his fingers to see whether it was permanent, and returned it to the chief.

"That is very wonderful; though I do not fear magic except an especial kind such as is practised by a certain witch doctor of my father's," he said, "nor do I know any government which can govern me."

After which he proceeded to tell them of his father, and his legions and wives and various other matters of equal interest.

"I do not doubt that you will understand me," he said. "I am a Lonely One, hating the company of men, who are as changeable as the snow upon mountains. Therefore I have left my house with my wives, who were faithful as women go, and I have taken with me no legion, since they are my father's."

The chief was puzzled. "Why you are lonely I cannot tell," he said, "but certainly you did right to leave your father's legions. This is a great matter which needs a palaver of elder men." And he ordered the lokali to be sounded and the elders of the village to be assembled.

They came bringing their own carved stools and sat about the thatched shelter where the chief sat in his presidency.

Again Imgani told his story: it was about fifty wives, and legions of warriors as countless as the sand on the river's beach, and the trustful Isisi listened and believed.

"And I need this," said Imgani in his peroration: "a little house built on the very edge of the river in such a place that no path passes me, for I am very lonely by nature, and a great hater of men."

Imgani went to live in the clearing Nature had made for him and in a hut erected by his new-found friends. Other hospitalities he refused.

"I have no wish for wives," he stated, "being full of mighty plans to recover my kingdom from evil men who are my father's councillors."

Lonely he was in very truth, for none saw him except on very special occasions. It was his practice to go hunting by night and to sleep away the hot days. Sometimes, when the red ball of the sun dropped down behind the trees on the western bank of the river the villagers saw the straight blue film of his smoke as he cooked his evening meal: sometimes a homeward-bound huntsman saw him slipping silently through the thin edge of the forest on his way to a kill.

They called him the Silent One and he enjoyed a little fame.

More than this, he enjoyed the confidence of his hosts.

The Isisi country is within reach of the great river down which strangely shaped boats come by night empty and return by night full of people who are chained neck to neck, and the officials of French West Africa—which adjoins the Isisi country—receive stories of raids and of burnings which they have not the facilities for investigating, for the Isisi border is nearly 600 miles from French headquarters, and lies beyond a wilderness.

Imgani in his hunting trips saw things which might have filled him with amazement but for the fact that he was a man who was not given to emotion.

He saw little caravans that came stealing from the direction of the territory of France with whimpering women and groaning men in bondage.

He saw curious midnight shippings of human souls, and grew to know the white-robed Arabs who handled the whip so deftly.

Once, as he stood watching all these things, El Mahmud, the famous trader, espied him in the moonlight, and saw that he was of a strange people.

"What man are you?" he asked.

"Lord," said Imgani, "I am of a strange people—the N'gombi."

"That is a lie," said the slaver, "for you have not the face marks of the N'gombi: you are half-breed Arab." He addressed him in Arabic, but Imgani shook his head.

"He does not understand," said the slaver to his lieutenant. "Find out where this man's house is; one night we will take him, for he is worth money."

He spoke in Arabic, and his subordinate nodded.

When the slaver came again, three men visited Imgani's house. But he was hunting, and he was hunting every time the long boats came by night to O-fari.

Sanders did not go to O-fari for six months, during which time, it should be emphasized, nothing happened which by any stretch of imagination could be held to justify any loss of prestige.

The Haussa captain was making a potable medicine with cigarette papers

He was due to make his half-yearly visit to the Isisi. The crops had been good, the fish plentiful, the rains gentle, and there had been no sickness—all these facts you may bear in mind.

One morning, when swirls of gray mist looped from tree to tree and the east was growing gray, Imgani came back from the forest bearing on his shoulders all that was material of a small buck which he had snared in the night.

When he saw a little fire before his hut and a man squatting chin on knee he twirled those spears of his cheerfully, but went on, for he was afraid of no man.

"Is the world so full of people that you come to disturb my loneliness?" he asked. "I have a thought that I shall kill you and fry your heart, for I do not like to see you sitting by a fire before my hut."

He said all this with a ferocious mien, and the man before the fire shifted uneasily.

"Master, I expected this," he said, "for I see you are a proud man, but I come because of your pride, knowing your wisdom."

A sergeant of Haussas grasped the chief and deftly swung him round

Imgani tossed the buck to one side, and sat down, staring threateningly, and laying the haft of his spears across his bare knee.

Then the other man craned his neck forward and spoke eagerly. The sun came up and flushed the world rosy, but still he sat talking with great force, Imgani listening.

"So, master," he concluded, "we will kill Sandi when he comes to palaver. Ifiba, M'bwka, and a cousin of my mother's will put spears into him very quickly, and we shall be a great people."

Imgani nodded his head wisely.

"That is true," he said. "People who kill white men must be greatly honored, because all the other nations will say, 'Behold, these are the people who kill white men.'"

"And when he is dead," the messenger went on, "many young men will go to the boat that smokes and slay all who are with him."

"That is wise also," said Imgani. "When I kill white men I also kill their friends."

He discussed his deeds to some length and with great detail.

After the man had gone Imgani made a meal of fish and manioc, polished the steel blades of his spears with wet sand, dried them carefully with grass, and laid himself in the shade of the hut to sleep.

He was awake in the early part of the afternoon, and went plunging into the river, swimming far toward the middle stream with great, strong strokes. Then he swam back to shore, let the sun dry him, and dressed himself in his leopard skin.

He came to the village slowly and found it agitated. More especially so was the chief, for news had arrived that Sandi was coming that night, and even now his steamer was rounding the bend of the river.

A plan had miscarried. Sanders was two days ahead of time, and Ifiba and M'bwka were away on an expedition, and there was no time to substitute unseasoned assassins.

The steamer drifted broadside to the shore, one stern wheel revolving lazily, and then they saw, Imgani among the rest, that the decks were crowded with soldiers, impassive brown men in blue uniforms and fezes.

A plank bumped down, and, holding their rifles high, the soldiers came pattering to the shore. With them was a white officer—but not Sandi. It was a brusque white man.

"Who is chief here?" he said, crossly.

"Lord, I am that man," said the stout chief, all aflutter.

"Take that man."

A sergeant of Haussas grasped the chief and deftly swung him round: a corporal of Haussas snapped a pair of handcuffs on his wrist.

"Lord," he whined, "why this shame?"

"Because you are a great thief," said the Haussa officer, "a provoker of war and a dealer in slaves."

"If any man says that, it is a lie," said the chief, "for no government man has witnessed such abominations."

Imgani stepped forward.

"Chief," he said, "I have seen it."

"You are a great liar," fumed the portly capita, trembling with rage, "and Sandi, who is my friend, will not believe you."

"I am Sandi," said Imgani, smiling.

Illegitimate Lectures in Literature

By Leonard Bacon

Decorations by F. Strothmann

IV.—THOMAS CARLYLE

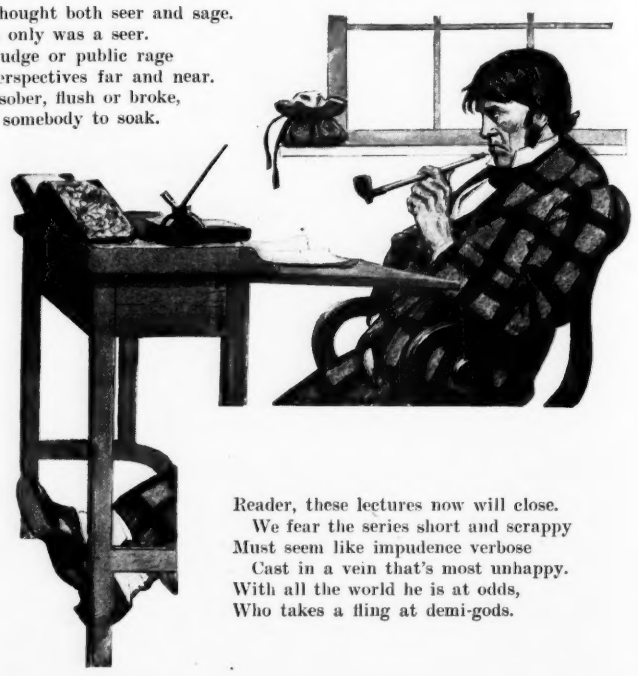
CARLYLE! Carlyle! To shake you up
  Your inmost intellect he jostles.
He fills to brimming Scotland's cup
  Till John Knox skins the Twelve Apostles;
And Homer's dust your spirit spurns
When T. Carlyle has yelled for Burns.

You cannot recognize the great
  Till you have read his work on heroes,
Assessing each at Bradstreet's rate—
  A1 Condés, insolvent Neros.
Unread, you bet your last samoleon
You can't tell Naso from Napoleon.

Remember, as you turn the page
  Of his fallacious *Revolution*,
He overdoes through bardic rage
  The tale of blood and execution,
That when the Bastille flamed to heaven
The mob delivered prisoners seven.

So much for accuracy. The prose,
  Of which he is acknowledged master,
Gives one a glimpse of nation-throes,
  And makes the healthy heart beat faster.
The trouble is, when most surprising,
He generally is generalizing.

Once he was thought both seer and sage.
  We know he only was a seer.
His private grudge or public rage
  Destroyed perspectives far and near.
And drunk or sober, flush or broke,
He still found somebody to soak.



Reader, these lectures now will close.
  We fear the series short and scrappy
Must seem like impudence verbose
  Cast in a vein that's most unhappy.
With all the world he is at odds,
Who takes a fling at demi-gods.

Building the Factory

By J. Anderson Wyatt

THE problems that have to be solved when a manufacturing plant is about to be established are many, and highly complex as well. The future prosperity of the industry depends on their correct solution in the beginning even more than it does on economical management after the plant is in operation. Many a concern has had to give up the struggle against the odds of a factory wrongly located or poorly arranged.

Two things especially must be considered long and carefully when choosing a site. One is the transportation facilities, and the other is the proximity of a good labor-market. As regards the former, it must be decided first of all whether the consumption of the goods to be manufactured will be restricted to a certain locality or whether it will be widely distributed, either locally or internationally. In either case, so far as the domestic distribution is concerned, the plant should be as nearly as possible in the geographic center of the region where the greatest demand is looked for. If there is a prospective world-wide market it will, of course, be more advantageous, all else being equal, to locate at some point on the seaboard. It is, however, possible that the supply of labor or the proximity of an abundance of raw material will be nearly as important factors in location as the market possibilities. This can be calculated with a certain degree of accuracy by a careful study of freight rates and tonnage.

An outlet by rail can be had with little difficulty in most cases. Nearly every railroad, in fact, has an industrial department which makes a specialty of looking up advantageous points for the location of industries on its line and supplying the information to manufacturers. Water transportation, however, is far less expensive than shipping by rail, and if there is a navigable waterway on which the plant can be located, which will offer a cheap and satisfactory initial means of distribution, that, of course, is to be preferred. Cartage charges, especially in large cities, are small items individually, but they amount to considerable sums when the year's balance-sheet is made up. Cartage is also as great a consumer of time as it is of money, and, in this competitive age, quick deliveries have much to do with getting new business and holding that which is already in hand. A water-front site in many cases, especially in New York City, cuts down the heavy cartage charges to and from the railway stations to a minimum. It should be borne in mind always that transportation eats up profits faster than almost anything else.

Another thing that should be investigated very carefully in regard to the prospective site is not only the width of the street in front of the factory, on which depend various facilities for loading and unloading, but also whether the thoroughfares over which the trucking will have to be done are well paved and level. A road whose grades are easy has a great advantage over one that runs up and down hill. Whether the trucking is done by horse-drawn vehicles or by automobiles, there is an expensive waste of effort if heavy grades have to be surmounted many times a day. Whether there are any municipal ordinances regulating the adjacent streets which will be likely to hamper the business should be looked into also.

To sum up, the ideal location, so far as transportation is concerned, is one with adequate rail connection on one side of the factory and facilities for water transportation on the other.

One of the greatest mistakes that the projectors of a manufacturing plant can make is to figure on drawing their labor supply from concerns already in operation. This not only promotes bad feeling among competitors, but it also increases the cost of labor considerably above what it should be under normal conditions. Where there is a plentiful supply of the right kind of labor—or of anything else—prices are low compared with a location where satisfactory help can be secured only by outbidding sone one else in the same line.

Once the site of the factory is tentatively decided upon, the price of the land, unless it is prohibitive, is a secondary consideration when it comes to establishing a large factory. Many times a cheap site is dear at any price, or vice versa.

After the site has been selected a careful investigation of the subsoil should be made, if the factory buildings are to be several stories high and of such weight that their foundations must rest on rock. About the only way in which the character of the earth may be ascertained and the rock stratum located is by taking borings at various points on the property. This is almost a necessity in cases where the presence of quicksand is suspected, and it also determines how deep the foundations will have to go and what their character and probable cost will be.

Then comes the designing of the building to meet the special requirements for which it is to be used. This is quite as important as the selection of a proper site, as the continuous movement of the raw material, from the time it is unloaded to the time it is converted into a marketable product, must be as quick and economical as possible. There are a few architects who make a specialty of certain types of factory buildings, but it will probably be necessary and cheaper in the end to secure the services of an expert in factory planning, both as to the arrangement of the building and the location of the machinery. The requirements of the particular line of manufacturing, not only for its existing needs but for future enlargements, should be considered most carefully. It is always well to be hopeful for the development of any enterprise in years to come, and it costs less to make changes over and over again on paper than it does to shift about bricks and mortar and machinery afterward. During all this planning time the financier, the architect, the manufacturer, the machinist, the contractor or builder, and every one else concerned, must come together again and again in mapping out the building before the first shovelful of earth is turned or the first blast of rock is made for its foundation. There will be long leisure afterward in which to repent or to try to remedy any mistakes that have been made through lack of thought or attention in these essential beginnings.

The plans for the building having been drawn and approved, the real work of construction must begin. Here, also, care and judgment must be exercised in letting the contract. Many times it proves of great advantage to a manufacturing concern to place the construction and equipment of its plant in the hands of one responsible contractor. This insures the probability of the completion of the task in the shortest time possible, and relieves the executive heads of the business of a great deal of detail with which they cannot be familiar.

The contractor, whether a firm or an individual, is quite as much a captain of industry as the manufacturer himself. The contractor has to have a trained office force and a staff of experts for his particular branch of work. Thousands of workmen are at his orders directly or indirectly through his sub-contractors. From the architect's plans and specifications he must be able to calculate every detail in advance and to arrange so that the scores of different operations in the construction of the building keep even pace with one another. If one falls behind it delays all the rest. As an organizer and executive the successful builder is a modern Napoleon on a small scale.

Putting up a building is a battle against time until it is finished. Therefore, in selecting a contractor and letting the contract there are other things to be considered than whether or not he is the lowest bidder. Careful investigation is likely to disclose which one among the bidders stands the highest in reputation for skill and reliability. The lowest bidder may be the most expensive of all. In letting a contract of this sort, as in everything else, the experience of others teaches that the best is the cheapest in the long run.

What Happens to Five Hundred Million Pounds of Wool a Year

By Rupert Bowers

ALTHOUGH we are the third largest wool-producing country in the world, we do not grow enough wool for our own use. The United States consumes about five hundred million pounds of wool every year. As a general thing three-fifths of it is of domestic production and the remaining two-fifths is imported. In an average year the value of our wool crop simply as raw material is about $90,000,000. Practically none of this is exported.

A little more than half of the wools which we import are of the coarse variety used for carpets. No carpet wools are raised here. They are practically a separate commodity. Of carded wools used for clothing, and combed wools used in the manufacture of worsted, our annual consumption is about four hundred million pounds. About one-fourth of this is imported also.

The amount of wool consumed in the United States is now more than five times as much as it was in 1860. Woolen manufacture stands second among the great textile industries, cotton alone exceeding it. The total value of the products of the fifteen hundred woolen-mills is about $400,000,000 per annum and nearly two hundred thousand wage-earners are employed. The value of the capital invested in this industry is about equal to the amount that the mills receive annually for their product. More than half the mills are engaged in the manufacture of woolen goods; about one-sixth make a specialty of worsteds; wool is turned into carpets and rugs by one hundred and fifty factories, into felt goods by one-third that number, and into wool hats by twenty-five. There has been a steady increase in every one of these industries except the last named. Wool hat manufacture has fallen off slightly during the past few years.

Massachusetts holds the first rank in the total value of all sorts of wool products. New York leads in felt goods and wool hats. The centers of woolen manufacture are Philadelphia, Pennsylvania, Lawrence, Massachusetts, and Providence, Rhode Island.

The fleece wools of the States east of the Mississippi make a little more than one-third of the annual clip. Most of these wools come from cross-bred sheep—those that are raised quite as much for their mutton as for their wool. Wool-growing in these States is only an agricultural incident. It is rare to find flocks of more than a thousand sheep; generally they do not exceed five hundred. The greater part of domestic wool comes from sheep ranges west of the Missouri River. In the States of Montana and Wyoming alone as much wool is raised as in all the others east of the Missouri put together. These two States, with Idaho, New Mexico, and the three on the Pacific coast, contribute considerably more to our national wool-supply each year than all the other States in the Union combined.

These Western wools are known in the trade as "territories." They are in sharp contrast to the fleece wools of the East, because they are clipped to a large extent from wool sheep, a distinct variety from the cross-breeds that are used for mutton. On the Western ranges the flocks are very large. It is no uncommon thing to find five thousand or even ten thousand the property of a single owner.

American wool-growing has changed radically in its methods, its location, and the character of its output in the past fifty years. In that time also wool manufacturing has been completely revolutionized. But despite all this wool-dealing, the business link between the grower and the manufacturer has remained unchanged. The methods by which wool is traded in are much as they were half a century ago. Wool is still disposed of in the United States by private sale, as it is also in all the other wool countries in the world except England, Australia, New Zealand, the Cape of Good Hope, and the German markets. In these places most of the wools are sold at public auction. Many attempts have been made to adapt the auction custom in this country and to simplify and standardize the grading of wool here, but every effort in this direction has met with failure from one cause or another.

The quality of wool varies not only in different States, but in neighboring localities. Therefore, the wool-buyer has to be one of the most astute and highly specialized experts in the commercial field. Not only must he be a judge of wool after it is clipped, but in some years, owing to certain conditions, he has had to buy the wool "on the sheep's back" months before it is ready for shearing and long before its real value can be ascertained. Two-thirds of the "territory" wool in 1909 was sold in that way.

The wool-buyer also must have at his fingers' ends not only the probable production each year of every part of the United States, but also that of every wool-producing country on the globe. He must know as accurately what is going on in the London market as what the demand is likely to be in Lawrence, Massachusetts. He must watch with equal care Boston, Buenos Ayres, and Australasia. The successful wool-buyer must combine all his world-wide data and interpret them. Upon the soundness of his deductions depends a profit or loss which may reach millions in the aggregate.

Many of the mammalian animals have both wool and hair in their covering, and only in a few species, chiefly of the sheep, more wool than hair is found. Wool differs from hair in having scales whose protruding points are like so many small hooks. This serrated or toothed surface gives wool its tendency to mat or felt together and makes possible the process of carding by which the fibers are mixed up and twisted in all possible directions. Upon the whole surface of a fiber of Saxony wool one inch long there are 23,000 of these minute points or scales, and in the finest grade of our domestic wool about 6,000. Breeding, selection, feed, protection, and careful handling have effected great changes in the fineness of wool, its length of staple and adaptation to various purposes. Sheep are classified, according to the length of staple, as "short," "medium," and "long" wools. The wool itself is classed under three general heads, each of which has many subdivisions. The first is carding or clothing wools, the second combing or worsted wools, and the third miscellaneous or carpet and blanket wools. This classification is based on the length, fineness, and felting qualities of the staples. The fine short wools felt more readily and are employed for carding and spinning, the scales of the curly filaments interlocking and forming a thread which does not untwist. The longer wools are less wavy and are better suited to combing and making worsteds. They are more lustrous than the carding wools.

Before the wool is sheared from the animal's back it is very dirty, being combined not only with earthy matters, but also with a greasy substance known as yolk or suint. In some wools this is more than two-thirds of its original weight. This greasy matter prevents the fibers from matting together except at the ends, where the matting is due to the yolk collecting dust. This coating, however, protects the inner fleece from dust and dirt which would injure it.

Sheep-shearing time in the highlands of Perthshire

Before its manufacture is begun the wool has to be thoroughly cleansed by passing through machines charged with soap and alkali and rinsing solutions. After that it is dried and is delivered to a machine that frees it from burs and other vegetable matters adhering to the fibers. This is also done chemically. The latter process is called carbonizing.

The next process is blending or mixing. This is one of the most important of the many steps of manufacture. Upon the blender's choice of wools for mixing depends both the quality and the price of the product. The blender selects the various wools and builds them up into a stack, placing layer upon layer. This stack is then beaten down with sticks and is passed through machines which mix the fibers more finely.

From there the wool passes to the carding-machines, which thoroughly separate and mix the individual fibers composing the blend. These machines consist of a number of cylinders of various dimensions revolving in opposite directions and at different speeds. These are all covered with fine, pliant wire teeth. By the contention for the possession of these fibers, which takes place between these teeth on opposing cylinders, the wool is reduced to an open fibrous condition. In a machine of this sort there are usually about fifty-six million points. Fifty millions of these engage the wool, carry it forward, and resist the action of the wires of other cylinders when they come in contact with the material. The other six million points act as extractors and springers, drawing or lashing the fibers from between the teeth of other rollers. It has been calculated that in one of these machines the wool is being continually disturbed and intermixed by 25,000 of these points. In carding three separate machines are sometimes employed, each containing an increasing number of points. From the carding-machines flows a uniform sheet—called a "sliver"—of wool from sixty to eighty inches wide and about one-eighth of an inch thick. This passes into the condenser, which breaks it into sixty or eighty pith-like filaments, which are eventually spun into threads.

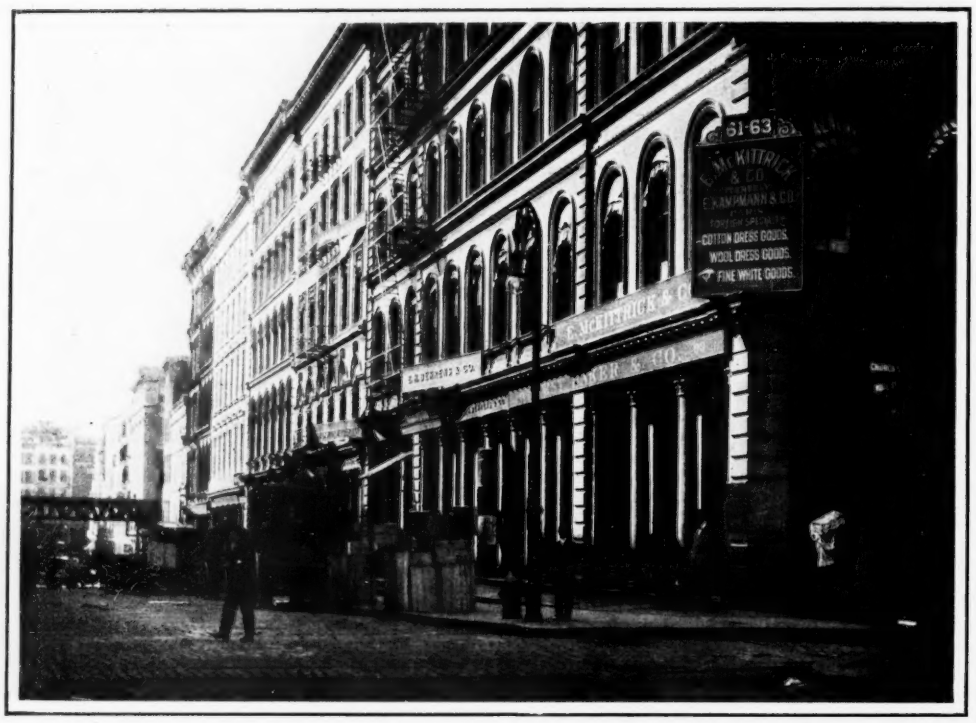
This spinning is done upon the "mule," which is one of the most intricate and complicated machines used in a woolen-mill. Briefly the operation of mule-spinning is as follows: When the condensed "sliver" is received from the carding-machines it is too thick for thread and must be drawn out. To prevent the "sliver" from breaking, a little twist must be inserted during the drawing out. When this is done the necessary twist must be inserted and finally the spun yarn must be wound on a spindle. The mule effects all these processes as the carriage runs in and out.

Every woven fabric is made by crossing or interlacing two distinct series of threads together. When the yarn comes from the spinner it is mounted upon the loom in spools. So wonderfully automatic are these modern looms that when a bobbin is emptied it is forced out and a full spool is put in its place without stopping the loom. There are all classes of looms for all classes of material, from the thinnest fabrics up to the thickest felts. To attempt to describe one of them, or the principles on which they are constructed, would involve the reader in a wilderness of technicalities. The power-loom is one of the most remarkable and complex of mechanical products, the growth of many years of experience and ingenuity, and the crystallization of the inventive genius of many minds.

The cloth in the shop-window resembles the cloth as it comes from the loom so remotely that there would seem to be no relationship between them. The first product of the loom is usually uncouth, harsh, and anything but inviting in appearance. It has to pass through many processes before it is finished and made ready for the market. It is first mended so as to correct weaving faults as far as possible. Then it is scoured and thoroughly cleansed. Again it is looked over and mended before it passes to the fulling or milling machine, which, with soap and fullers' earth, produces the finish that is required. Then it is scoured again. Tentering is the next process. This sets the cloth at a satisfactory width and straightens it for the operations that follow, the first of which is called raising. The millions of tiny hooks on the gigging-machine raise up the fibers on the surface of the cloth and leave them in an upright position. The pile or nap is the result. This produces a remarkable change in the appearance and condition of the fabric. Shearing is the next thing. This cuts off all the raised fibers, leaving them of a uniform length. The required gloss and solidity are obtained by the pressing which follows.

With the worsted wools the processes are different. The fibers are combed out so as to lie parallel with each other. There is not so much a blending and frequent remixing as there is a systematic separation, drawing out, and arranging of the fibers in one common line. The wool is first opened and separated in the carder, then it is straightened and leveled in the gilling-machines. The next process extracts the short and curly fibers and leaves the straight and long ones parallel with each other. These flow out in a thin, even ribbon from the machine, and from this ribbon a twisted yarn is made. In the spinning much more twist is put into the yarn to make a firm thread.

The production of worsted goods has increased enormously owing to mechanical improvements—the per-



Worth Street, New York, between Church Street and West Broadway, the center of the wool district

fecting of machinery capable of combing wool of short staple, which was impossible with the old hand methods. Another element which has brought this about is the crossing of the merino sheep with some of the commoner varieties that have produced a grade of wool particularly adapted to combing. Up to forty years ago the amount of worsted manufactured for men's wear was very small. In 1870 there were only 102 establishments with 12,920 employees. There are about five times as many worsted-mills now and the increase in the number of wage-earners has been much greater. The home manufacture of worsted suitings and overcoatings now almost meets the demand and comparatively little is imported. The figures for women's dress goods are similarly hopeful.

Only a few years ago the manufacture of felt goods was the smallest of all the departments of the wool industry both as regards quantity and value of product. Now the felt goods industry exceeds that of the manufacture of wool hat materials, which is the least of all.

Feltings are used for an increasingly large number of purposes — for piano keys, for endless belts for paper-making, for slippers and shoes, for polishing, and for upholstery and dress linings. Probably the greatest increase has been in felt belts for paper-making machines and in the product for trimmings and linings.

The use of yarns for hosiery and general knitted goods also has increased tremendously during the past two decades. A vast quantity of this wool is mixed with cotton for making merino and mixed yarn, and another large part is made into cotton warp yarns for dress goods, linings, flannels, etc. About one-third as much cotton as wool is used for this purpose.

In the ordinary classes of woolen and worsted fabrics there are four distinct methods of forming a pattern or design in the loom. The first is by the employment of warp and weft yarns of the same color and size; the second consists in using two or more different weaves, but only one color of thread. In the third principle of design a combination of various colors or sizes of yarns in both warp and weft is used, but only one kind of weave. The fourth method is the most comprehensive and includes both a combination of weaves and of fancy colored yarns. There appears to be practically no limit to the number of weave combinations. Some are applicable to worsted and others to the ordinary woolen fabrics. Complicated designs, resulting from a novel arrangement of weaves, cannot be so advantageously applied to all-wool suitings and trouserings as to worsted fabrics. In the latter a design is formed by the interlacing of the warp and weft yarns. Pattern-weaving is one of the special branches of woolen manufacture to which many people devote a lifetime of study.

The remarkable advances made in textile chemistry and textile physics of late years have revolutionized the finishing processes of wool manufacturing. There is no fiber used in textile manufacturing that is easier to dye than wool. Aniline colors may be fixed on this material simply by bringing the fibers into contact with the liquid containing the coloring matter. Silk has a strong affinity for dye substances, but it will not hold the colors as permanently as wool. Wool has been known to absorb the dye material out of the solution and leave the liquid quite clear. When cotton is mixed with wool great care has to be exercised in fixing the color, as it is liable to run or "bleed" in the finishing processes. The tubular structure of the cotton fiber does not admit of that free absorption of the dye solution which is necessary to effect permanent coloring. The infinitesimal indentations or undulations in the wool fiber, caused by the serrations overlapping one another, are at the foundation of its color-absorbing capacity.

The actual operations in finishing, as applied to dress goods, linings, etc., are many and varied. They include, among the most modern inventions, processes for making the fabric water-proof or spot-proof, the mercerizing process which gives a silk finish to mixed cotton and wool goods, and the process for producing a crêpon effect on other mixed goods. There are other new methods for tentering and singeing in order to produce glacés or alpacas, as well as in brushing, shearing, pressing, etc., in order to obtain various finishes. Each one of these—and there is hardly a month that some new improvement or some novelty does not appear—would be worth a separate article in itself. In wool, as in every branch of textile manufacture in America, progress is being made almost from day to day. Improvements in existing machinery and inventions of new machines to lessen labor and increase production are becoming so common that little notice is taken of them outside the pages of the purely technical journals that are devoted to such specialties.

"On the Carpet"

SOME FACTS WORTH REMEMBERING ABOUT A GREAT INDUSTRY

By Henry Patterson Waldo

THE primary use of carpets in Europe was to cover tables. The first of these so-called carpets were embroidered — not woven—fabrics, and were made in French cloisters about a thousands years ago. The manufacture of carpets in Europe did not begin until the reign of Henry IV. of France. In England the industry was established about 1750 by a French artisan who, being at odds with his own country, fled thither.

Persia, however, was the carpet's original home. There it and the rug were the most important, if not the only, furnishing of the house. In the East the carpet still serves its original purpose. In Mohammedan countries the Moslem still spreads it for prayers, as he has done for more than thirteen centuries. Turkey, Persia, and India still send us the most beautiful examples of carpet-weaving from hand-looms, though the demand from the West has caused their slow and patient workmen to vulgarize the ancient patterns and cheapen their product, so as to get the rugs off the looms and into the bales as quickly as possible.

Carpet-making, as a modern industry, was first developed in France. That country had large factories and a monopoly in Europe of the art of carpet-weaving when a rush-strewn floor was the rule even in the royal palaces of Britain. But the Edict of Nantes, that great disperser of French artisans and artistry, caused many of the carpet craftsmen to cross the channel. They settled at Bristol, Axminster, and other places in the southwest of England. From there the secrets of the industry spread to Glasgow, Kidderminster, and the towns of Yorkshire. These places are still the great carpet-weaving centers of Great Britain.

The first carpet-mill in America was not established until after the close of the Revolution. It was in 1791, at Philadelphia, that carpet-making as an industry was born in the United States. Since then, however, this country has become pre-eminent in carpet-making, for the same reason that it has won first rank in all the other textile arts and other industries, not through devising new weaves, but by the invention of numberless time and labor-saving devices in carpet-looms.

Owing to these inventions the carpet-mills of America turn out each year tens of thousands of miles of carpets and rugs of all sorts. The wholesale value of the product of the one hundred and thirty-nine carpet-mills of the United States last year was $61,586,433. The industry stands third in the list of wool manufactures, and is next to that of worsted in importance. The largest moquette carpet factory in the country is at Yonkers, New York, and the largest ingrain carpet mill in the United States is at Philadelphia. This latter mill turns out every year more floor covering of all sorts than any other mill in the world.

Not so very long ago we were importing ninety per cent. of all the carpets that we used. To-day, our imports of carpets amount in value to only about five per cent. of our annual production. It will not be long before our imports and exports will be about even. Our total exports of carpets last year were 67,000 yards, valued at $66,000—less than the output of one of our enormous mills for a single day. Despite the flood of "antique" rugs that pours in from the Orient, the demand for American rugs is growing very rapidly. More and more American carpets of all kinds are now woven in one piece.

There are two distinct classes of carpets: ordinary woven fabrics and pile fabrics. The former have a flat surface, like other knitted or woven fabrics, and are variously known as ingrain or Kidderminster carpets. Ingrain, in this country, is the same as Scottish or Kidderminster in Europe. The term ingrain, as applied to carpets, originally designated a fabric where the wool was colored before carding and spinning. This is not the case now, as the yarn is mostly manufactured before coloring. The reasons for this change are the great variety of colors now used in ingrain carpets, the constant changing of styles, and the saving of expense by coloring the yarn after it is spun. An ingrain carpet is reversible, but the relation of colors on one side is opposite to that on the other. If there is a green design on a yellow ground on one side, for instance, there will be a yellow design on a green ground on the other. Ingrain carpet is made in two piles, consisting of a worsted or cotton warp and a wool filling. The surface is flat, or unpiled, since the weaving is not interrupted by the use of wires or other devices to raise the warp threads.

Among the better known varieties of pile carpets manufactured in America are Wilton, Axminster, Brussels, tapestry, moquette, and velvet. Wilton and Brussels carpets have a cotton or linen chain, a linen filling, and a warp of colored worsted yarn. The pile consists of loose loops of worsted thread formed over wires and held down at their bases by a firm fabric of linen threads, into which the worsted loops are woven. The Flemish origin of this carpet is shown by the width of the piece being still the Flemish ell. The first Brussels carpet loom introduced into England came from Tournai. When the wires, after forming the loops, cut through them at their highest point the Wilton or velvet carpet is produced. The pile in this case forms a kind of plush. The variety known as tapestry carpet, more properly tapestry Brussels, differs from body Brussels only in the materials used. It is the simplest form of the wired pile carpet. It is made with a cotton chain, a linen or jute filling, a jute yarn backing and worsted warp. The pattern, however, is not produced by the weaving together of threads of different colors, but is printed on the warp in an elongated form. The looping of the warp by the wires in the weaving process reduces the pattern to its proper proportions. Velvet carpet holds the same relation to tapestry as does Wilton to Brussels—the wire points used to raise the warp into loops have a cutting edge that severs them into so many straight piles.

Axminster and moquette carpets, although resembling the former varieties in the piled surface, differ very essentially in the materials used and in the processes of manufacture. Both are made on looms which are much alike. The peculiarity of moquette carpet is that the pile surface is formed by cutting off short pieces of woolen yarn and fastening them to the warp threads as the back is woven. This is in imitation of those Eastern styles in which the "Oriental knot" is employed to make a very fast pile. The back is composed of heavy jute and cotton and the pile yarn does not appear on the wrong side. In these carpets a machine of American invention holds the rows of bobbins, each containing yarn of the color answering to its position in the pattern, and as fast as a small piece is inserted, as a tuft in the jute foundation, the latter is woven and is then cut by machinery.

True Axminster is an imitation of Turkish carpet. It has a linen or hempen warp and a chenille filling. The surface, of course, partakes of the peculiarity of the filling, which is made by weaving together four warp threads of wool, or three warp threads upon a soft filling thread, thus producing the characteristic "caterpillar" appearance which is imparted to the finished carpet.

Our Weaves for Foreigners

By J. V. D. Osmund

THE manufacture of textile fabrics is the third largest business in the United States. First among our industries come foodstuffs and second is steel. The welfare, the very livelihood, of one-twelfth of the American people is dependent upon the welfare of the textile-fabrics trade. By textile fabrics we generally understand cloth of woollen, worsted, or cotton weave, with their variants of knit goods, carpets, rugs, felts, wool hats, etc. The textile industry provides all the material with which our people are clothed, except the leather footwear. The straw or woollen hats of men and women, or the knitted hoods of babies; the hosiery, underwear, and outer garments, the ribbons and braids that adorn them; the rugs, carpets, towels, sheets, blankets, and bedding in general—all are products of the textile industry. It is estimated that one million and a quarter of the people of the United States are directly engaged in the manufacture and sale of textile fabrics.

The state of the cotton-fabrics market and its future is the most interesting feature among textiles to-day, for it seems very probable that we shall soon enter upon a new era in the export trade in which the United States will take its share of the world's business. Indeed, it may be said with truth that we must go out into the markets of the world to dispose of our product, for the home market has already absorbed all it can take, under the present abnormal conditions, and if all the mills of the country were run at full capacity to-day there would be much difficulty in getting rid of their output at a profit. And inasmuch as the makers of cotton textiles, like most other American manufacturers, have not given sufficient study and care hitherto to developing the foreign market, it is possible that the new order of things may amount almost to a revolution. Woollens and worsteds are so involved with the tariff that it is difficult to estimate what the course of their market will be until the question of the tariff has been settled; therefore cotton textiles will be first considered here.

There is a general belief that the cotton crop of 1911 will be greater than that of 1910, and that the amount of textiles made from it will show a corresponding increase; yet it is not likely that the amount of fabrics consumed at home will show a corresponding enlargement. The disparity between what we use and what we can make in the United States is growing greater each year, although even now, if all the American mills were to run at full capacity, the home market would be flooded. With this condition constantly becoming more aggravated, it is evident that we must forthwith look abroad for customers. It will surprise no one, of course, to learn that Great Britain gets more of the world's export trade in cottons than any other nation, but it may be surprising to learn that she has nearly fifty-six per cent. of it—55.83 per cent., to be exact. The total exports of cotton manufactures for 1909—the latest year tabulated—was $1,000,000,000, and of this Great Britain's share was $558,269,108. Her nearest competitor was Germany, with only 9.55 per cent. of the trade, while the United States occupies seventh place, with a mere 3.44 per cent. of the trade to its credit—a trifling $34,414,860 out of the billion dollars' worth. And this although 66.4 per cent. of the world's cotton crop was grown in this country.

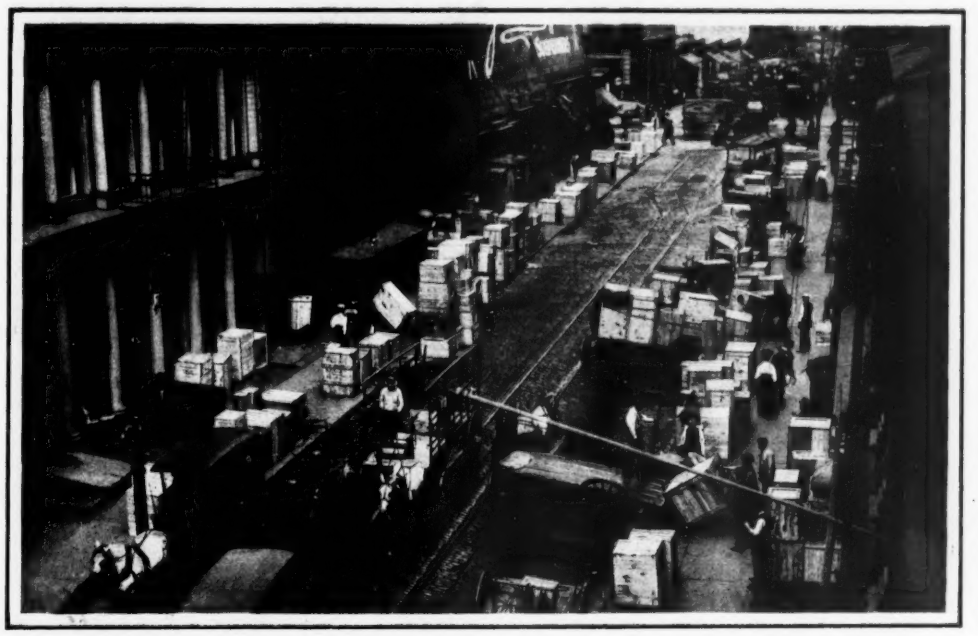
The reason for England's long lead in the export trade is not far to seek. For a hundred years the Britons have far exceeded the ability of their tight little island to support them, and under the spur of dire necessity they have done wonders in developing foreign trade. Thanks to long experience, they have developed what might be justly called a genius for export business. But even this does not excuse Americans for falling so far behind them in the race for the commerce of the world. True, we have at home a population of 93,000,000 to use up most of the output of the mills, but even then we have enough surplus product to supply the needs of at least one-fourth of the rest of mankind. Even though the cost of the mills and the average wages in this country are higher than those of European countries, we can still undersell the world in sheetings, drills, ducks, denims, and other coarse cottons; while in times of normal-priced cotton we can still compete in many lines of finer cottons.

One single instance of the difference between the exports of the two countries will serve to illustrate how great is the disparity to be overcome. In the year 1910 Great Britain exported to Bombay alone nearly one billion yards of cotton fabrics, while the total exports of the United States to all of the British East Indies was some seven and a half millions of yards. Great Britain's exportation during 1910 to that entire territory amounted roughly to two and one-third billion yards. Startling as is the difference between the Englishmen's trade and our own, it is not all to be explained by the fact that they have been specializing on East-Indian cloths for generations, while we have only recently begun. The chief obstacle to increase of our trade has been an unwillingness to cater to foreign tastes, a feeling that what is good enough for our people is good enough for any one. Here is a New York exporter, for example, who has his prints put up in fixed assortment and says he cannot afford to change his assortment to suit the buyer. The English send out samples, and they are willing to quote on cloth and printing separately, and they will then make and pack as desired. Of course, they charge for the packing, but the customer is willing to pay the extra price for goods he needs rather than buy an assortment of prints which will include some that his market will not take.

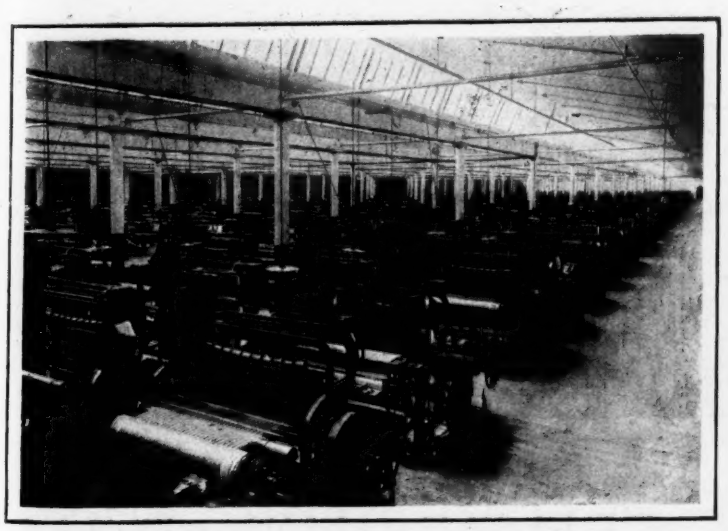
In different countries cloths of various weights and widths are required. The English not only cater to the demand of the customer as to the width, weight, finish, and length desired, but they will cater to his requirements in the matter of price by making his goods of lower quality. In some countries there are standard market prices for certain fabrics, and it is almost impossible to alter these prices. When cotton goes up the English quote the price unchanged, meantime lowering the quality and still retaining the former general appearance; while the Americans raise the price of their fabrics, which are really of unchanged quality, but unsalable at the higher rate.

The English place greater reliance upon commercial travellers who represent the producer direct. These salesmen so distribute their sales that there cannot be ruinous competition among the buyers in any region. They are careful, too, to sell only to the wholesale dealers, so that the retailers cannot buy small lots direct from the exporter. American houses are not so particular. Not only is there no effort to suppress competition among buyers, but it is rather encouraged. In the haste to get orders the exporter sells both to the foreign distributor and his customer. Thus the one-case retailer buys his goods at as low a price as the large distributor who has taken fifty cases. This results in such confusion that the American exporter seldom hears any further from the large distributor, and has to content himself with a few scattering orders from the retailers.

Undoubtedly American exporters are awakening to the necessities of the foreign trade. There is a growing disposition to accommodate the needs, the tastes, even the whims of foreign markets. Especially in the Southern States, in which the making of cotton fabrics is a newer industry and has not become so conventionalized in installations and practice, is there a keener outlook for export business. It is certain that American makers of cotton textiles are learning more day by day of the importance of foreign trade, and that they will get it.



The wholesale dry-goods district in New York City, in which textile fabrics are assembled for distribution



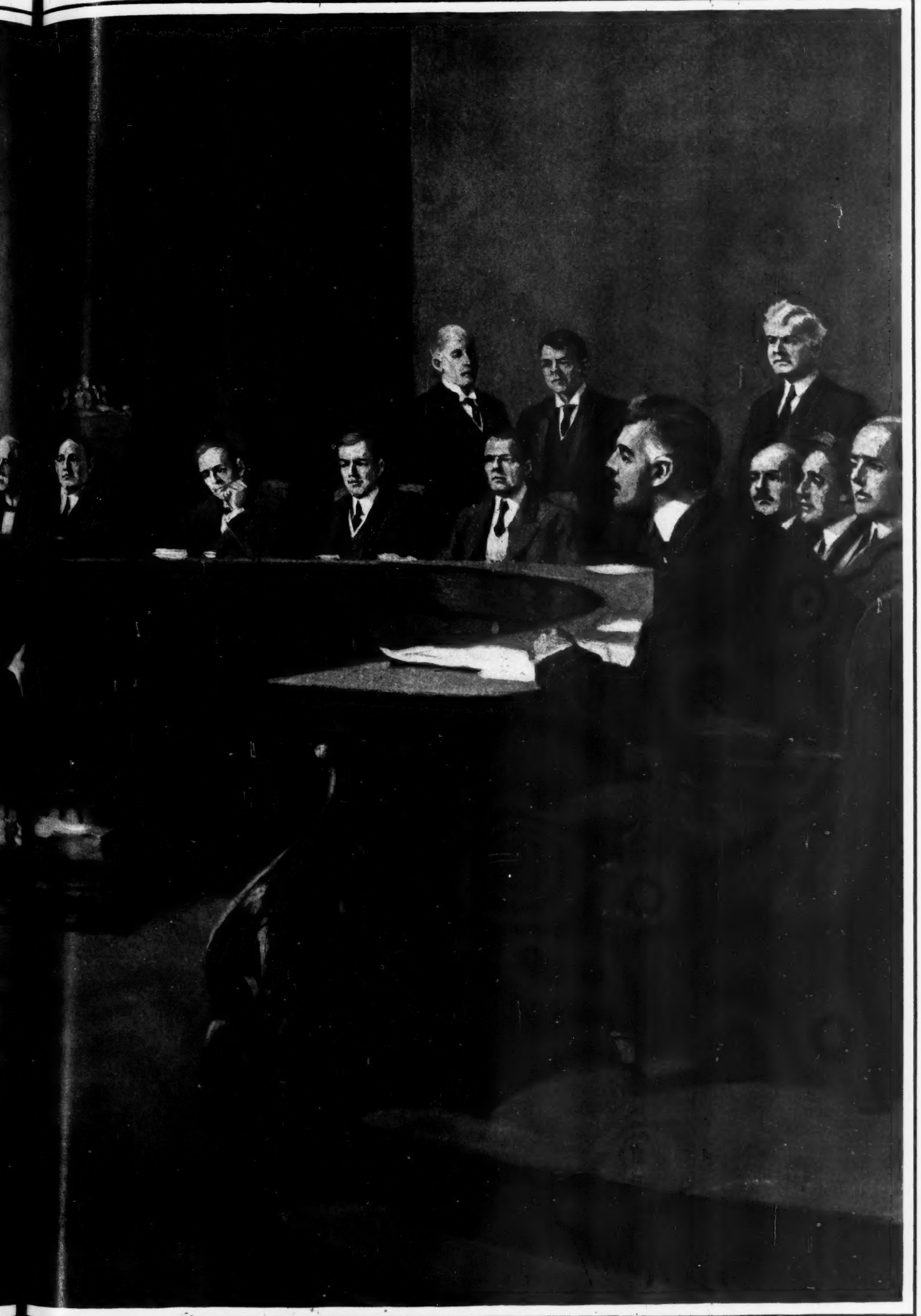
Ten hundred and forty looms in a weaving-shed of a New England cotton-mill
Courtesy of *Textile Manufacturers Journal*

Warping and drawing ends of worsted yarns in one of the largest Middle Western worsted-mills
Courtesy of *Textile Manufacturers Journal*

A HEARING BEFORE THE WAYS A ME

THE MEMBERS SITTING, FROM LEFT TO RIGHT, ARE MESSRS. LONGWORTH, FORDNEY, NEEDHAM, HILL, McCALL, DALZEL UNDERW

DRAWN THULST



MEANS COMMITTEE OF THE HOUSE

UNDERWOOD, RANDELL, HARRISON, SHACKLEFORD, BRANTLEY, KITCHIN, RAINEY, HAMMOND, HULL, PETERS, AND PALMER

THULSTRUP

Interludes

SUGAR-COATED ETIQUETTE

(Being Little Lessons in Deportment in Fictional Form, by Professor Wilberforce Jenkins)

THE JUSTIFICATION OF HIRAM

Hid behind the copious folds of his morning paper, Hiram Wigglesworth sat at the breakfast table. He had slept the sleep of the just man, and seemed at peace with all the world. A steaming platter of corned-beef hash studded with lustrous poached eggs lay before him, and life seemed fair, and then, suddenly, without warning, the rustle of silk greeted his ear. Lowering his paper he cast a surprised glance in the direction of the doorway, and there, standing between the half-opened portières, her face white and wan, stood his daughter. She seemed faint and ill at ease, but none the less there was a look of strong determination upon her countenance.

"Why, Essie," said Mr. Wigglesworth, solicitously, "what are you doing up at this time of the mornin'? It is only ten o'clock—ain't you feelin' chipper this mornin'?"

The girl entered the room and sat herself stiffly down at the other end of the table.

"Father," she said, her voice trembling, and her lips all of a quiver, "I must have some explanation of your conduct at Mrs. Van Tyle's last night."

The old man gazed at her anxiously over the gold rims of his eye-glasses.

"Why, Essie," he answered, a look of bewilderment clouding his honest face, "I ain't aware that I done any forks-passes. I kep' my feet on the floor, and I didn't shove nobody, and when the ice-cream come I eat it with the tool that come with it."

"Oh, I know—I know," retorted the daughter, passionately, "but when you sat down at the bridge table with Mrs. Van Tyle and the Countess of Chiasso—oh! I never was so mortified in all my life. You—"

"Why, Essie," pleaded the old gentleman, trying hard to recall any act of his that could possibly give offense, "I thought I done pretty well at the bridge table. I didn't—"

"Oh, what is the use, father?" interrupted the girl, impatiently. "I heard you."

"You heard me what?" demanded the old man.

"I heard you order a finger-bowl," quavered the girl, wiping the tears from her cheeks.

Hiram Wigglesworth's face beamed with pleasure at these words.

"Oh, is that all?" he laughed. "Well, my little girl needn't bother her head about that. Her impossible old dad isn't such a mud-horse at ettiketty after all. Don't you know why I done that?"

"I can't imagine," groaned Esmeralda, "nor could anybody else."

"I done it because I never could deal without wettin' the cards, Essie dear," explained the old gentleman, "and you know, girlie, that vest pocket edition of *The Gentle Art of Gentility*, says—"

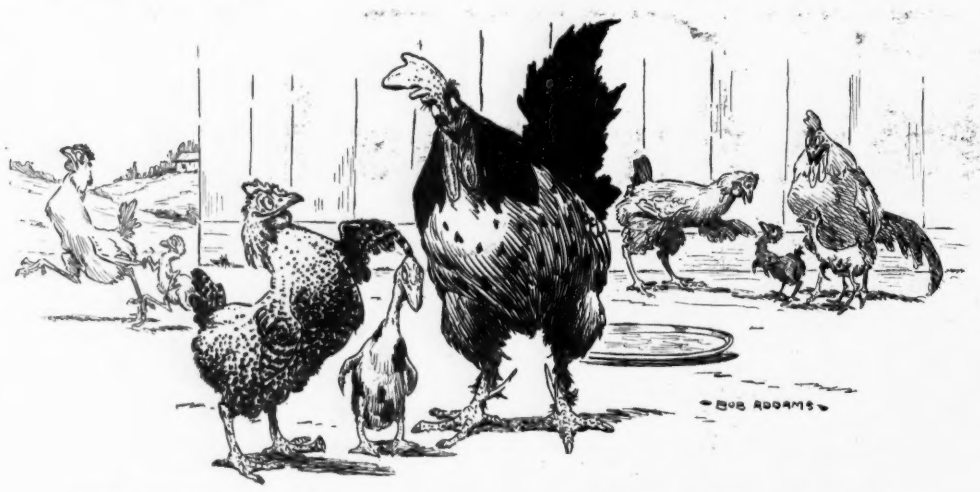
The old man paused a moment, and, plunging deep down into his pocket, extracted therefrom a well-thumbed volume scarcely bigger than a postage stamp.

"It says here," he went on, "on page ninety-seven, rule forty-six, 'When playing cards, don't moisten your thumb and fingers on your lips or tongue in order to facilitate the dealing of the cards.' That's why I ordered the finger-bowl, dear.—"

But the fair girl had fainted, and poor Hiram Wigglesworth went his way to his office cursing the day on which society was invented, and heartily wishing himself back at Sanguinary Gulch again with One-Eyed Mike, the Welcher, and Light-Fingered Bill, the Five Ace Poker-Player.

"They had their bad points, them fellers," he muttered to himself, "but gol-rammit, there was some human nater to 'em!"

MOTHER'S PROBLEM



MISS SPINSTER: LOOK WHAT I HATCHED OUT OF THAT EGG I STOLE DOWN BY THE POND.

A SUGGESTION

It was at the club. Chollie had just seated himself beside Cynicus.

"I've made up my mind," said Chollie, "to go in for some kind of a hobby. All successful men do it, but I'm blest if I know just what to go in for. Can you suggest something rare I might collect, Cynicus?"

"Why, yes," replied Cynicus, with a wink at the genial philosopher, "why don't you try to collect your thoughts?"

ADJOURNED

"Hello, Bilkins, how is that assembled car you got last season doing?" said Barry.

"It isn't doing," sighed Bilkins. "It struck a thank-you-marm up in Maine the other day and the Assembly adjourned sine die. I tried to get it together again, but after a three hours' search I found I couldn't get a quorum present, and quit."

AN APPALLING EXCUSE

"This is the fifth time you have been brought before me this term," said the judge, frowning severely upon the prisoner at the bar.

"Yes, your Honor," said the prisoner. "You know a man is judged by the company he keeps, and I like to be seen talkin' to your Honor for the sake of me credit."

"All right," said the judge. "Officer, take this man over to the island and tell them to give him a credit of thirty days."

NOT WANTED

"Now this arrangement of springs," said the demonstrator, "is such that whatever the inequalities of the road, you never feel the slightest jar in riding. There is no jolt to this car."

"Then I don't want it," replied the fat man. "I want a car that will jolt, jar, jounce, bounce, and jostle me until my waist-line reappears. I want to escape that corporation tax the Supreme Court has just decided to be constitutional."

THE ANNUAL QUESTION

"Well, Hawkins, old man," said Witherbee, "has your wife decided where she will spend the summer?"

"Yep," said Hawkins. "She's going abroad."

"So? And how about you?"

"Well, I don't know yet," sighed Hawkins. "I haven't decided whether to stay in town or go into bankruptcy."

MISTRESS: HAVE YOU GIVEN UP ALL IDEA OF GETTING MARRIED, BRIDGET?

BRIDGET: OI HAVE THOT, MUM. SURE! WHY SHOULD OI GIVE UP AN AISY JOB WIT' GOOD PAY FER THE REVAIRSE?

Finance

By Franklin Escher

THE PROPOSED "INVESTIGATIONS"

FOUR or five years ago when the gentle sport of trust-baiting was being much indulged in by the Washington politicians, Wall Street used to receive the news of each fresh "investigation" with a shiver of apprehension, and wholesale selling of the stocks concerned. Recently, when the report came from Washington that after a long period of surcease from political harassment, Congressional investigation of some of the country's biggest industrial combinations was again about to be begun, Wall Street received the news without a tremor. There was, naturally, wide-spread expression of regret that such a time should have been chosen for the introduction of these resolutions into Congress, but of the outcome of the actual investigation no one appeared to be in the least afraid. What a difference between that attitude and the one which would have been taken only a very few years ago. What a tribute to the improvement which has occurred in the conduct of big business.

One thing is primarily responsible. A great change has come over the relationship of the corporations and their stockholders during the past few years. It used to be held that a small shareholder in an industrial company had no claim to know anything about the company's operations. By very few of the big combinations is any such attitude taken at present. Public opinion to the effect that the shareholder is a partner has asserted itself, and the result has been such publicity of corporation affairs as has never before been dreamed of. In the conduct of the business of a large company there are necessarily many details which it is inexpedient to make public, but the stockholder in most of these big corporations realizes that the reports he gets are full and free. That is why he shrugs his shoulders at the news that the company in which he is interested is to be "investigated," and expresses the belief that "they won't find anything."

These, however, are generalities. With this Congressional investigation impending, and the publicity policy of the corporations the main bulwark against fear as to the outcome, it is interesting to take individually some of the more prominent of the industrial combinations and note where they stand. It is somewhat of a coincidence that the principal concern which it is now proposed to favor with a Congressional investigation, the United States Steel Corporation, should be the very one which has always been foremost in giving out information as to the conduct of its affairs. Publicity, from the very beginning, has been the Company's policy. Reports have been full and free—a detailed statement of earnings at the end of each quarter, an annual report containing all the information for which any shareholder could reasonably ask. Criticism that no report is made on the corporation's relation with the independents—to be explicit, that the doors are locked on the famous "steel dinners" held every once in so often in New York—is almost too puerile for notice. As well expect the managers of the concern to shout the details of their business policy from the housetops, or publish the terms of the contracts they make with their customers in the newspapers.

Another big combination whose reports are so full as to challenge attention is the International Harvester Company. Ever since the foundation of the concern, nine years ago, its shareholders (and that is to say the public) have been kept fully apprised as to the company's operations. But from the report just issued it is plain that even further progress toward publicity is being made. Aside from an exhaustive recapitulation of the year's business, and a thorough analysis of the company's position, the report is a veritable catalogue, beautifully illustrated, of what the company manufactures. The location of the concern's various plants and the distributive agencies established here and abroad are graphically shown. A series of charts illustrate the world-wide distribution of the company's product. Every page of the report bespeaks the company's policy of putting into the hands of every stockholder the very fullest information as to the way in which the business is being run.

Still another industrial combination of the first water which has consistently followed the policy of taking its shareholders into its confidence and making them feel that they are, indeed, the company, is the American Telephone and Telegraph Company. And all the more difficult has been President Vail's task from the fact that the telephone business is essentially a monopoly, and that the average American has an inborn antipathy to a monopoly in any form. That public sentiment toward the Telephone Company is as favorable as it is is entirely due to realization of this fact by those at the company's head, and to the consideration with which stockholders and public alike are treated. It is a feature of the concern's policy of publicity that not only are the most complete reports issued, but that supplementary announcements are made from time to time concerning special developments.

With the other great group of industrial combinations the policy of publicity is not as clearly defined, but it is only necessary to compare conditions prevailing now with those prevailing up to within a few years ago, to see the great progress which has been made. Standard Oil itself has not yet come to issue any particularly illuminating reports, but such companies as Amalgamated Copper and Corn Products Refining nowadays give their shareholders much fuller information than formerly. To a certain extent, perhaps, this change is due to the fact that since the New York Stock Exchange abolished the "unlisted department" any company which wants to have its securities traded in on the Exchange is required to make reasonably full reports. But of far greater importance than that is the realization on the part of the heads of these big concerns that times have changed and that the stockholder of to-day wants to know what is going on. Not only that, but that he has begun to appreciate his power to make the company give out reasonably full reports. In these days of big financing, credit is an important consideration, and between credit and public opinion the connection is close.

In the case of many other big combinations of capital the old methods of secrecy have given way to the modern idea that the shareholder is a partner to a certain extent, and that he is entitled to know the results of the company's operations. The most conspicuous example, perhaps, is that of the Consolidated Gas Company in New York, concerning the affairs of which the shareholders, up to within a couple of years ago when George B. Cortelyou was made president, were given a minimum amount of information. In the case of that company it is different now, and it is different in the case of most other big companies.

It would be silly, of course, to imagine that in the conduct of the business of the country's big corporations nothing goes on which does not appear in the published reports, but it is a fact that the shareholders in most of these big industrial combines have little to fear from investigations, Congressional or otherwise. Take the case of the United States Steel Corporation. From the last annual report of Herbert Knox Smith, Commissioner of Corporations, it is evident that the Department of Commerce and Labor last year conducted a searching inquiry into its affairs. Long ago the results of that investigation must have been made known to Attorney-General Wickersham, and had there been any ground for action on the part of the Department of Justice, suit would long ago have been brought. Similarly with regard to the Senate's investigation of the Tennessee Coal and Iron deal, which it is now proposed to go all over again. As for the American Sugar Refining Company, one of the three which it is now proposed to investigate, it can be said that the satisfaction with which the corporation's officers look upon the proposed investigation is entirely reasonable. For several years, on account of the notoriety achieved by the airing of practices prevalent under the old management, the company has been under a cloud. If, as is generally believed, there has been a complete renovation of the company, a Congressional inquiry which will result in wide publicity being given the changed state of affairs is rather to be welcomed than feared. In no other way can the disagreeable impression lingering in the public mind as a result of the disclosure of former practices be expunged as effectively as by a public investigation resulting in the company's being given a clean bill of health.

At the same time, and while there is nothing in the proposed investigation for stockholders to worry about, it is impossible to get away from the fact that if this move on the part of Congress means a recommencement of the trust-baiting movement, a very disquieting influence has been introduced into the situation. So constituted are a good many persons' minds that the mere fact that an accusation is made and an investigation begun is a presumption of guilt. And, as nothing on earth is perfect—certainly not the industrial combination system of to-day—very probably the inquisitors *will* be able to pick flaws and furnish "leads" to that section of the press always on the lookout for something sensational. However regrettable it may be, it must be taken for granted that, these investigations once under way, no chance will be neglected to "make the better appear the worse reason." In the placing of these big companies on the grill there are almost unlimited possibilities for "copy," and that "copy" has got to be made readable. In the course of a searching examination it would be surprising, indeed, if nothing applicable to the requirements of those whose mission in life it is to "expose" big business could be turned up.

Treating "Sick" Pearls

PEARLS, the most capricious of all gems, are curiously susceptible to adverse influences, they being affected even by the physical condition of those who wear them. When a pearl becomes "sick" or "sad," it is necessary to take measures to restore to it its former luster and brilliancy, and this is done in a number of ways.

One method is to boil the sick gem in fresh cow's milk in which soap has been dissolved. When the gem has been boiled for a period of about fifteen minutes, it is taken out, rinsed in clean water, and dried with a clean white cloth. If the desired effect has not then been obtained, the stone is again subjected to the boiling process.

Sometimes, when the above method proves unsuccessful and the expert fears to subject the gem to another boiling, another curious method is employed. There is procured a small loaf of bread, in which, before the loaf is baked, the pearls are laid, strung upon a silk thread; or they may be closely wrapped in a piece of gauze. The bread is then allowed to bake thoroughly, but not to become brown. When the loaf is taken from the oven, it is allowed to cool, after which it is broken and the pearls removed.

Pearls to be perfect must possess these special qualifications: first, they must be perfectly spherical, just as though they had been artificially fashioned; secondly, they must be slightly translucent and free from spots, specks, or blemishes; and thirdly, they should have the peculiar luster characteristic of the gem.

My Candle

BEFORE the picture of an armored knight
She placed a candle with a little light,
A tiny candle with a steady flame
That put a glow of gold about the name
Galahad: "It is your candle," was her word,
And first I wondered, then my youth was stirred
To a resolve as fine as this her thought,
To be her knight in all things, and in naught
Less worthy of her than that storied knight,
Puissant and pure, above my candle's light.

How long before I learned that youth is frail
When in the lonely questing of the Grail
Immediate sweet cups are offered him?
How long before I knew that dreams can dim,
And a thin tenuous thread of faith remain
Truth's only guide through ways of sin and pain?
How long before my knightly crest sunk low?
Yet for the whole adventure I can show
At last the only guerdon that I sought,
My Love's own love; because it seemed as naught
To her that I had mingled good with bad:
It is myself she loves, not Galahad:
And when, disarmed, I came to her again
She kissed me; there is no more sin or pain.

SHAEMAS O'SHEEL.

Where Diamonds Lie

IN the South-African diamond-fields the gems are found in what are called "pipes," which are round or oval stems of a peculiar kind of rock, several acres in extent at the top, and running down to unknown depths into the earth. Near the surface this rock, which is rich in iron, is disintegrated by exposure to the weather, and assumes a yellowish color. The precious pebbles are readily extracted from the friable rock.

Deeper down the "pipe" changes character. The rock becomes a comparatively hard, blue mass, much more difficult to work. Yet it is still sprinkled through with diamonds, lying embedded in the moulds where nature made them. This blue rock has to be exposed to the weather, or treated with water, before it will yield up its treasures.

Now it is clear from the nature and appearance of the diamond-bearing rock that it is of volcanic origin, and the "pipes" are evidently the necks of ancient volcanoes, whose fires died out probably thousands of years ago. When we consider that the diamond burns and is consumed at a high temperature, we cannot think that the gems contained in those ancient pipes of rock were brought there from the interior of the earth while the rock was in a molten condition.

It is far more probable that, under peculiar conditions of pressure and temperature, they were formed where they are now found while the rock was cooling off. It remains to be learned what the real conditions of their formation were.

How Needles Are Made

THE steel wire from which needles are made is cut into the proper lengths. After a bath of such bits as have been cut out, they are put in a furnace, when they are rolled until they are perfectly straight.

The needle-pointer then takes a dozen or so of the wires, rolling them between his thumb and finger, with their ends on a grinding-stone, first one and then the other being ground. The little steel bobbins are then fed into a machine that flattens and gutters the heads, after which operation the eyes are punched.

The result is a complete needle, but one that is rough and easily bent, and it is necessary that it should receive further attention in the form of careful heating and sudden cooling, which process affords the necessary temper. There then remains nothing but to give the final polish. On a coarse cloth there are spread needles to the number of forty or fifty thousand. Emery-dust is strewed over them, oil is sprinkled on, and soft soap dabbed over the cloth, which, rolled tightly, is thrown into a pot with others, where it rolls about for a space of twelve hours or thereabouts. When taken from this friction bath the needles require only a rinsing in clean hot water, when they are ready to be sorted and packed.

The Largest Loom

AT Rodewisch, in Saxony, the center of the German textile industry, there has been set up what is thought to be the largest weaving-loom in the world. This huge crank loom is seventy-seven feet long and sixty feet wide. It stands ten feet high and weighs thirty-five tons. The shuttle is of corresponding proportions, and travels to and fro at the rate of fifteen times a minute.

This machine is capable of turning out seamless disks of felt, such as are used in paper-mills, up to two hundred and thirty-three feet in circumference.

THE BEST WORM LOZENGES for CHILDREN are BROWN'S VERMIFUGE COMFITS. 25 cents a box.

ADVERTISEMENTS.

FEED YOUNG GIRLS

Must Have Right Food While Growing.

Great care should be taken at the critical period, when the young girl is just merging into womanhood, that the diet shall contain that which is upbuilding and nothing harmful.

At that age the structure is being formed, and if formed of a healthy, sturdy character, health and happiness will follow; on the other hand, unhealthy cells may be built in, and a sick condition slowly supervene which, if not checked, may ripen into a chronic condition, and cause life-long suffering.

A young lady says:

"Coffee began to have such an effect on my stomach a few years ago that I finally quit using it. It brought on headaches, pains in my muscles, and nervousness.

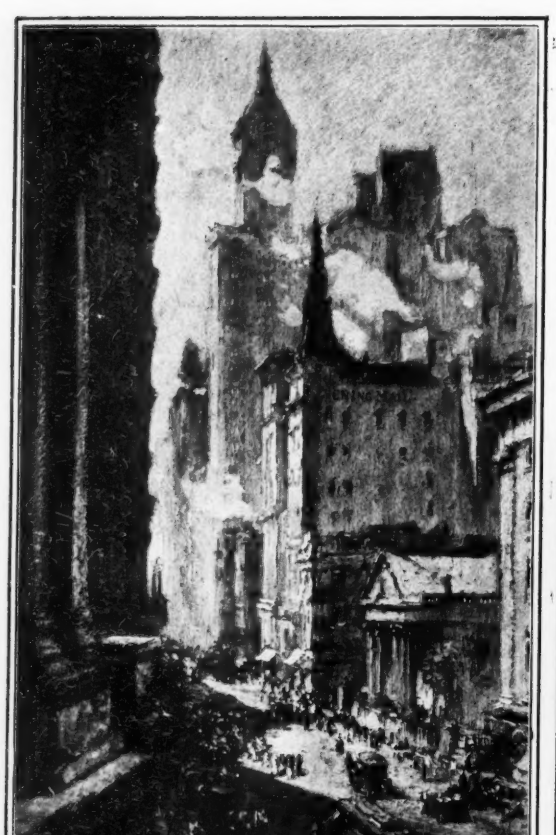
"I tried to use tea in its stead, but found its effects even worse than those I suffered from coffee. Then, for a long time, I drank milk at my meals, but at last it palled on me. A friend came to the rescue with the suggestion that I try Postum.

"I did so, only to find, at first, that I didn't fancy it. But I had heard of so many persons who had been benefited by its use that I persevered, and when I had it made right—according to directions on the package—I found it grateful in flavour and soothing and strengthening to my stomach. I can find no words to express my feeling of what I owe to Postum!

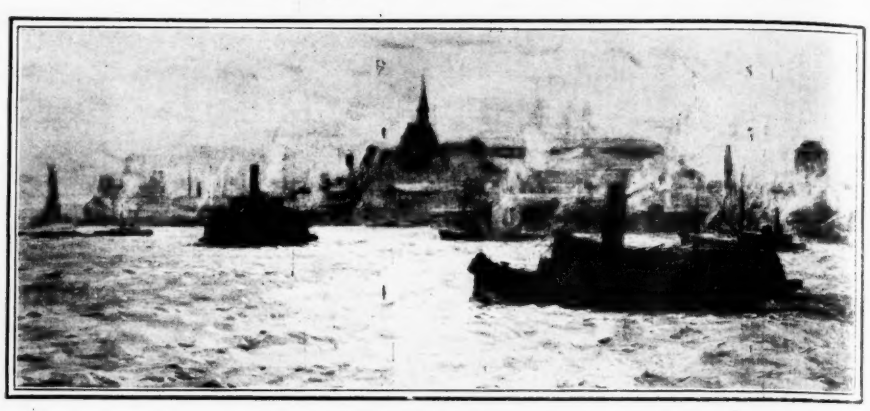
"In every respect it has worked a wonderful improvement—the headaches, nervousness, the pains in my side and back, all the distressing symptoms yielded to the magic power of Postum. My brain seems also to share in the betterment of my physical condition; it seems keener, more alert, and brighter. I am, in short, in better health now than for a long while before, and I am sure I owe it to the use of your Postum." Name given by Postum Company, Battle Creek, Mich.

"There's a reason."

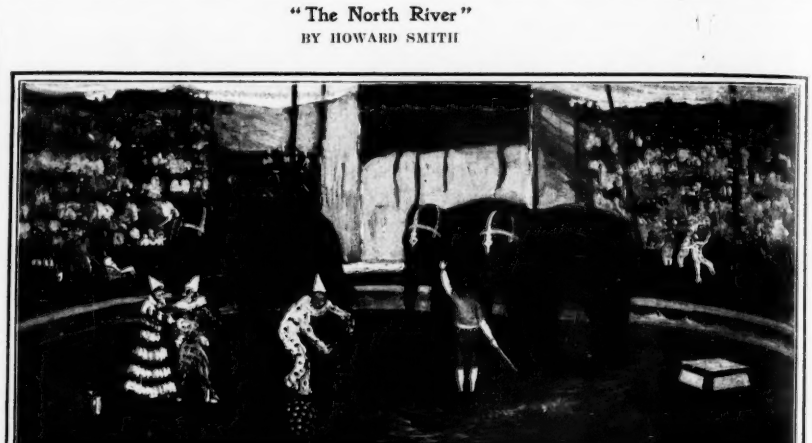
Ever read the above letter? A new one appears from time to time. They are genuine, true, and full of human interest.



"Broadway from the Post office"
BY COLIN CAMPBELL COOPER



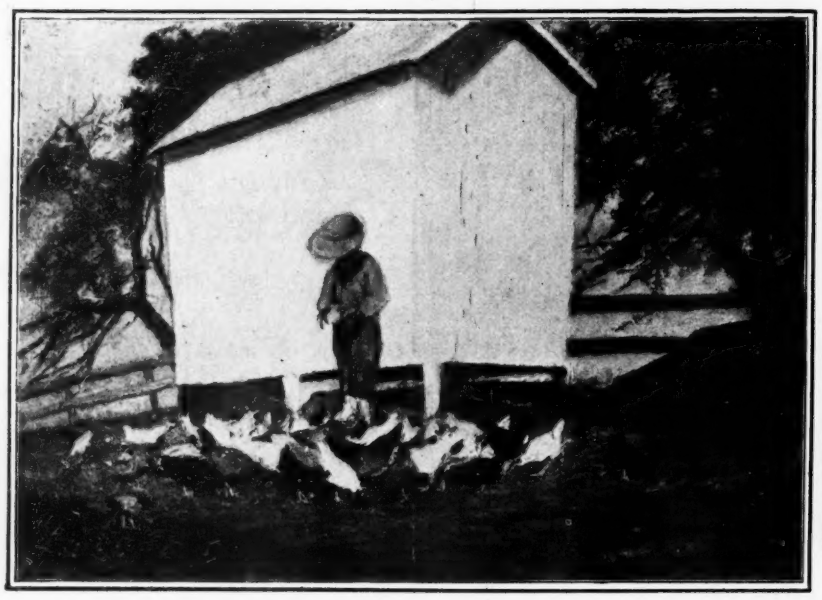
"The North River"
BY HOWARD SMITH



"The Elephants"
BY GIFFORD BEAL

"A Cup of Tea"
BY MARY CASSATT

"Wednesday's Market"
BY F. HOPKINSON SMITH



"Here, Chick, Chick, Chick!"
BY AGNES M. WATSON

"Mrs. John H. Richards and her daughter Betsey"
BY HILDA BELCHER

SOME CANVASES AT THE AMERICAN WATER-COLOR SHOW

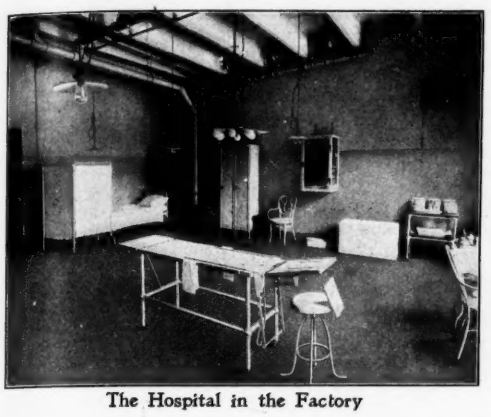
NOTEWORTHY PICTURES AT THE FORTY-FOURTH ANNUAL EXHIBITION OF THE SOCIETY, NOW BEING HELD IN THE FINE ARTS GALLERIES, NEW YORK

A Model Corporation: The United Shoe Machinery Company

WHAT IT HAS DONE FOR THE DEVELOPMENT OF A GREAT INDUSTRY, AND THE HEALTH AND HAPPINESS OF ITS PEOPLE

THE United Shoe Machinery Company is unique. Neither in its methods of manufacture and distribution nor in its administration has it a counterpart. It produces a system of machinery which is vital to the shoe industry of the world. Its product is furnished to the shoe manufacturers under terms and conditions which have a direct bearing upon the cost and quality of the footwear with which the world is supplied. In no other way could shoes of the quality reach the wearer at so low a price. Little of the Company's machinery is sold. It is leased, because shoe manufacturers, as a rule, prefer to lease rather than buy outright. The United Shoe Machinery Company assumes the entire expense of its installation and maintenance. The Company guards against its obsolescence.

The shoe manufacturer may equip his factory in part



The Hospital in the Factory

or in whole with one machine or a complete system of machinery. He need not tie up his capital by the purchase of his machinery. He may lease it. The cost of maintenance does not fall upon the manufacturer. Repairs constitute practically no item in his figuring. There is no percentage of depreciation to be charged off. His alertness and time are not taxed in continuous experiment with new devices. His expense begins with the turning of the wheels of his factory. It ceases when the wheels cease to revolve.

The Shoe Machinery Company manufactures the machines; it installs them; it employs a corps of experts to keep the machines in complete repair; it maintains a large staff of inventors who are ceaseless in their efforts to evolve new machines and devices; obsolete apparatus is replaced by modern equipment.

The cost to the manufacturer is a small royalty on the operations of the machinery. The average royalty for all classes of shoes, both direct and indirect, is less than 2¾ cents per pair. This is all that the Shoe Machinery Company receives. Out of this sum it pays the whole cost of manufacturing machines; of development of new machines and purchase of parts; of administration—in short, the entire expense of conducting its business. The Royalty System is not new. It has been in operation from the time that shoe machinery demonstrated its worth. It has played an important part in maintaining competition in the shoe industry—the only great industry in the United States in which the trust form of control has not made headway.

The service rendered to the shoe manufacturers is the service of efficiency. The manufacturer reaches the people with efficiency.

Nowadays the administration of a business postulates, or ought to postulate, the health, happiness and prosperity of the people engaged in that business. That this is the case is not due alone to the force of public opinion. Good, hard-headed business proclaims it a sound proposition.

It is pleasant to discover that it is not always necessary for the people to speak, and that a great corporation does not always survey things with the theodolite of calculating business.

That side of the story of the United Shoe Machinery Company is worth consideration. The Corporation stands in a class by itself in the new standard it has set for the employers of men.

The United Shoe Machinery Company was organized hardly more than ten years ago. The home factories were located at Beverly, Massachusetts. The people's welfare was studied before a contract was let, before ground was broken. The choice of a site, the sums appropriated, the specifications laid down foreshadowed a new order in the industrial world.

The "Model Community" of conventional type was not undertaken. The independence of the people was the thing. The Corporation sought to open the way. It encouraged the people to do the rest. The activities of the Company's operatives outside the factory were not to be regulated officially. An Industrial City built itself. The officers and directors of the Company sponsored it and looked on while the people, untrammeled, administered its affairs. That is the Beverly situation to-day.

Beverly is on the north shore of Massachusetts Bay. The factories of the United Shoe Machinery Company are spread out upon the broad acres of a picturesque country-side within a mile of the Atlantic water-front. The plant is surrounded by smooth lawns and farm land in a state of advanced cultivation. The Bass River flows within a stone's-throw beneath the slopes of the highlands.

The factory buildings, twelve in number, are fire-proof and death-proof. They were the first of considerable size in the United States to be constructed of re-enforced concrete. Two of the manufacturing buildings are 1,120 feet long. The others are 820 feet in length. Each is 60 feet in width and of four stories. The wall space is ninety per cent. windows. There is no vitiated air within these factories. Fresh air is constantly drawn down from the sky by an elaborate system of fans, and heat is distributed by the same system. The plant is lighted by electricity. The floors of the shop are free from dirt and litter. Shining windows flood the great rooms with sunlight. The lavatories and toilet-rooms are gems of the plumber's art, all marble, porcelain and nickeled metal. Showers and tubs are distributed throughout the factories. Each operator is provided with an individual metal locker. Hundreds of freshly laundered towels are distributed each morning, and, soiled, are instantly replaced. The men have a smoking-room. For the women and girls there is a rest-room with rugs, easy-chairs, couches and a piano. A matron is in constant attendance. The working hours for the women are shorter than those of the men. They enter the factories ten minutes after the male help and leave ten minutes earlier. The Company provides a special train and special trolley cars, morning and evening, for those living at a distance from their work.

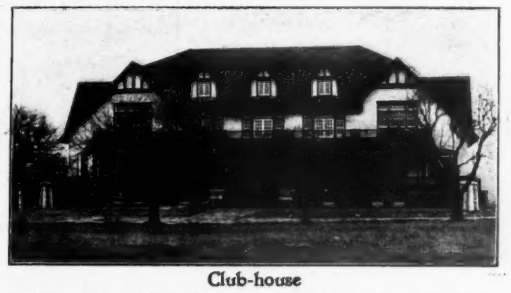
There is a factory restaurant where luncheon is served at cost prices. The table is supplied from the Company's farm and gardens.

An emergency hospital is a feature, with a trained attendant on duty at all times and expert surgical service instantly available in case of necessity. The hospital is as scientifically equipped as those of the great cities. There are beds, an operating table, medicines, surgical instruments, an X-ray machine, and emergency supplies such as ether, oxygen, etc. The fittings are glass, marble, tiling, and the walls are enameled.

For the convenience of the employees there are at the main exit a news-stand, a tobacco and candy counter and a laundry agency. Near by is a garage for automobiles and storage racks for hundreds of bicycles and motor cycles.

The great question of wages has been made a matter of earnest study. The plan sought for and finally adopted emphasizes the personal independence of the workmen. Under it the employee is able to work out his own salvation. He makes or breaks himself. He stands or falls by efficiency or inefficiency. His status is a matter of personal pride with him. As a result, the standard is high, and the rate of wages is higher than in any other community in Massachusetts.

The independence of the man is aimed at not merely in the matter of money earned and the status thus arrived at. Outside the factory the Company places the man in the way of things. It remains for the man to seize opportunity. To such employees as wish it the Corporation donates the use of land for kitchen gardens. The Company plows, fertilizes and harrows the soil and secures the seeds. The employee cultivates the crops. Several acres of these gardens supply the vegetables for family use. Each spring the Company distributes plants and shrubs for cultivation at the homes of the people.



Club-house

A colony of homes has sprung up in the vicinity. They are owned by the people and the Corporation has paved the financial way. The architecture is varied and discriminative. Near by stands a splendid public-school building erected by the City of Beverly upon land presented by the United Shoe Machinery Company.

The employees organized a Mutual Relief Association. It was their initiative. The Company employs a secretary whose sole duties are confined to the administration of the organization. The Company pays the salary without undertaking to direct the policy.

It was the United Shoe Machinery Company which introduced Savings Bank Insurance into Massachusetts. Of the 2,521 policies now in force in the State, 402 are held by employees at the Beverly factory. The average policy is almost $500, the maximum limit allowed by law.

The United Shoe Machinery Athletic Association is another activity. Upon its organization, the directors of the Company set aside a large portion of land for the use of this Association. Its area affords facilities for football, cricket, baseball, tennis, shooting and boating. On the last day of the old year the Corporation presented outright to the Athletic Association a club-house fully equipped and furnished. It is located in a rolling country-side and possesses all of the attractions of an ideal country club-house. The structure is of cement and of picturesque architecture. There are broad porches and spacious rooms. Bowling alleys, billiard tables, card-rooms, a library, the shelves of which are lined with fiction and books of reference, are a part of the privileges. Lockers and showers and quarters for the devotees of outdoor sports are provided.

On an upper floor is an assembly hall with a perfectly appointed stage. The hall is available for dances and theatricals. Each year the musical organization presents an opera.

Class in Drafting, Industrial School

The dues are one dollar a year and all employees are eligible.

The athletic field and Country Club is within ten minutes' walk of the factory and a shorter distance from the homes of many of the members.

The Industrial School for Boys is the only one of its kind in the world. The United Shoe Machinery Company and the City of Beverly jointly maintain this trade school for machinists. Seventy boys are receiving instruction and obtaining experience in the machinist's art.

At the factory a separate department has been organized for the purpose. The Company has equipped this branch with all necessary machines and machine tools for the accommodation of thirty-five boys. Two groups of thirty-five alternate between the factory and the laboratories at the Beverly High School. The Company furnishes all materials, keeps the accounts, and purchases at established prices the machine parts made by the boys. The United Shoe Machinery Company makes up the deficit between the earnings of the practice shop, as shown by the accounts, and the cost of maintenance of the practice shop, including the salary of the instructors while in the shop. The prospectus of the school reads:

"Independent management, but having access to the facilities of the High School laboratories and the factory of the United Shoe Machinery Company.

"Enrollment, seventy young men in two divisions, A and B.

"One week alternately at the school and at the factory. School days, eight hours; Saturday holiday; no home lessons. Factory hours and discipline the same as for employees.

"Machinist-instructor teaches his division in both factory and school. Part-time specialists teach science, business practice and civics.

"Machinery manufactures, inspected by regular factory inspectors, and go into regular stock of the United Shoe Machinery Company.

"One-half regular piece price for all his product that passes inspection is paid each pupil."

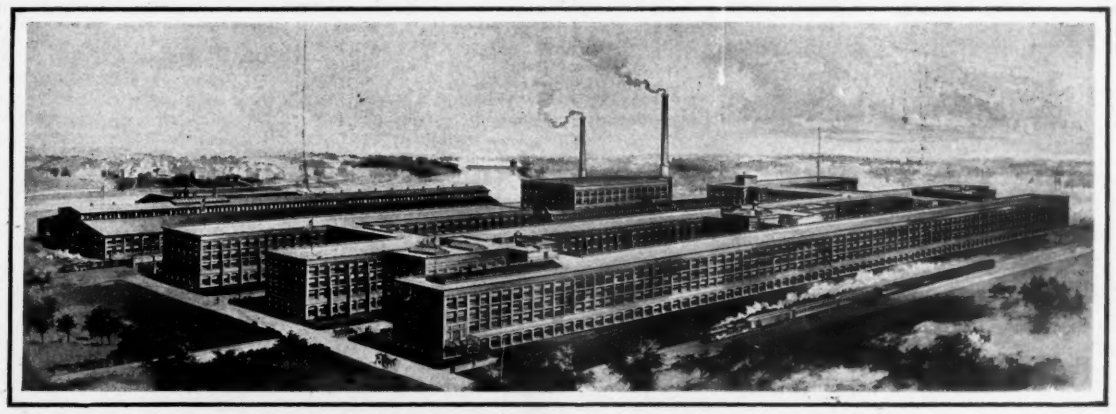
THE COURSE OF STUDY INCLUDES

At the Factory. Operation of different machine tools on various classes of work, and specializing on machine tools for which special aptitude is shown. Each pupil makes a free-hand mechanical sketch and writes a description in note-book of the various articles manufactured by him.

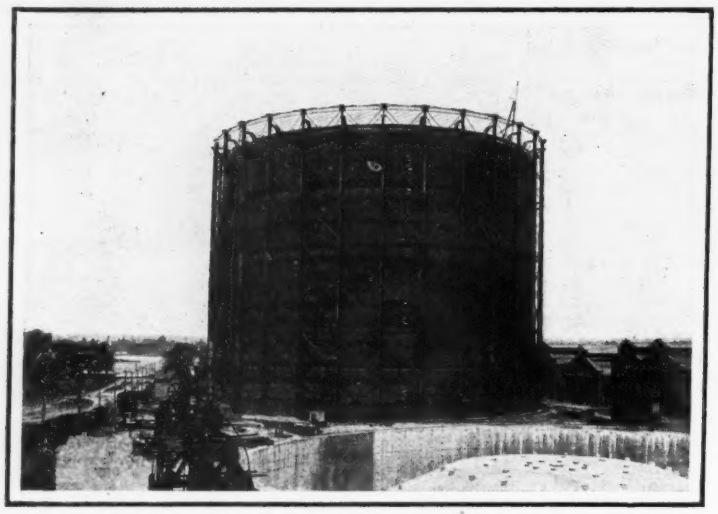
At the School. (a) Drawing: mechanical sketching with all necessary dimensions, working drawings, perspective, industrial design, machine design. (b) Shop Mathematics: arithmetic, algebra, geometry, trigonometry with shop tables and the use of instruments of precision. (c) Machinist's literature, current and historical, and modern machine-shop practice. (d) Science: mechanics, electricity as applied to machinery, chemistry of materials and their manipulation. (e) Business and social forms and practices, and personal, social and civic duties.

The United Shoe Machinery Company employs over 5,000 people. It is under such conditions that they work and live.

"Welfare" work is done, but it is done by the people as well as for the people. The people are placed in the way of their own "uplift." Thrift is suggested and encouraged rather than regulated. Wholesome pleasure is fostered, not defined. Industry is rendered quite as much a matter of inspiration as of necessity. Citizenship is a rational thing. It is not preached. It is absorbed. Life is made worth the living. The corollary is the life lived by the people.***



THE BARTLETT-HAYWARD CO.



The Largest Gas Holder in the World. 15,000,000 Cubic Feet Capacity

IN the radical character of its evolution the gas holder of to-day—the most important storage warehouse in our modern civilization—has excelled even the evolution from the stage-coach to the locomotive—a time-worn simile, to be sure, but one from which it is difficult to escape in attempting to illustrate striking difference. The modern gas holder is literally and actually a "storage warehouse" whose maintenance is as necessary as the maintenance of the granaries and the protection of the herds and the flocks and the continuance of the whirring of the wheels in great industrial plants.

Compare the earliest of the racing chariots of Rome with the latest model of the multiple-unit electrical engine and the contrast is not as sharp as it is between the gas holder made of a sheep's bladder and the gas holder whose cubic measurement converted into square feet would furnish standing room for a brigade of infantry and artillery.

But the gas holder itself is only a part of the evolution. The arteries that tap it are even more wonderful in their growth. Consider the pipe about as thick as a man's wrist used one hundred years ago with the 60-inch mains connected with the Titan of gas holders at Astoria—the mighty reservoir with its almost unbelievable capacity of 15,000,000 cubic feet, the biggest in the whole world, and exceeding in capacity the famous London gas holder by 2,500,000 cubic feet—just let the mind's eye look for a moment on the pictures. The monster main, the mightiest ever cast, with its clear space of 5 feet from side to side and from top to bottom, would have appalled the builders of the greatest of the water conduits when Roman civilization was at the zenith of its engineering skill. Such a cylinder for such a purpose would have been almost inconceivable even fifty years ago. Indeed, it is not exaggerating the condition of things to say that the entire gas equipment of to-day, with its retorts and holders and thousands of miles of mains, is just about as different as the difference between the cave men who cooked their food on hot stones and the housewife of to-day who prepares her meals on the gas range; and it is illustrative of the remarkable progress of the age to know that there are 240,000 of these gas ranges in Manhattan and the Bronx alone and approximately 200,000 "hot plates" and cookers.

The march from the primitive methods of 160 years ago is of amazing interest. The gas holder, as we now know it, was invented by Lavoisier, the great French chemist, and the first history of them was published in 1789. Previous to that time, or at least up to the year of 1781, the only means of retaining gases were with bladders or with pneumatic jars. These vessels originally were called gas meters and the term is sometimes used nowadays. The inventor used that name because he intended the holder to be a measure of gas for experimental purposes, and for a great many years this was their function, but they are now simply vessels of capacity and the simple name of "gas holder" has been determined upon as the most expressive and appropriate.

The holder is composed of two distinct parts, one of which contains water and is called the tank, and the other is the vessel which contains the gas and is really the gas holder. What is called the tank in this country is known as the "cistern," and the huge cylinder which we call the holder in this country, is in Europe generally spoken of as the "bell." When gas was first made the holders were in the form of cubes and other rectangular figures, but these possessed several disadvantages independently of the waste of material required to construct a box-like receptacle as compared with that necessary for a cylindrical vessel of any given capacity. It was found that the corners and the angles of the square gas box required bracing, and other precautions were necessary in order to maintain the uniform resistance.

The first gas holders were made of wood and in the early days these reservoirs were about the size of the large vats used in breweries. These wooden tanks were constructed by carpenters and, curiously enough, they were compelled, under their contract, to guarantee the duration of the vessels for some stipulated period. The action of the ammoniacal liquor produced during the manufacture of gas speedily destroyed the wood and corroded the iron hoops, and then, as the demand for gas grew greater and its consumption increased, the manufacturers had to adopt the use of a different material for the tanks.

It is rather amusing to note, in comparing the huge reservoirs of to-day with those of one hundred years ago, that in 1814 a deputation of the Royal Society visited the gas works of the Chartered Company in Westminster and strongly recommended that the government should restrict the company from building gas holders exceeding 6,000 cubic feet in capacity, and there was a strong urging that these should be placed inside of buildings built of the strongest sort of masonry.

As late as 1841 there was a publication by John Clegg in which all the engineers in the country were greatly interested. He made the statement which, at that time, was considered a remarkable one, that "gas holders are now constructed to contain 250,000 feet." This was regarded as a reservoir of extraordinary size even up to the year 1850. In 1890 the capacity of the largest gas holder in the world had advanced to 2,000,000 feet and this was regarded as about as near the extreme limit that ever could be reached; and twelve years ago a holder of 3,000,000-feet capacity was the largest in the world.

It was subsequently surpassed, not only in size, but in cost, by a holder of 5,000,000 feet cubic measurement. When it is considered that the immense cylinder at Astoria is three times the size of what was known ten years ago as the Livesay gas holder, some idea may be had of the stupendous character of the gas industry in the year 1911.

Gas not only has supplanted electricity in its broadest uses, but is striding beyond it in the household and is more than keeping pace, as an illuminant, in the great municipal centers of the world. Witness London. The principal streets in the West End, where the illumination has been brought to its present state of perfection by ingenious improvement and device, is so perfectly lighted that a man walking on one side of Regent Street could easily recognize the features of a friend on the opposite side of the roadway. The city of Westminster, extending from Temple Bar on the east to Chelsea Bridge on the west and from the Thames on the south to Oxford Street, is now lighted by incandescent gas burners so brilliantly, and withal so softly, that, as one engineer expresses it, "a man could distinguish as small an object as a coat button in the middle of the street.

But whatever the illumination may be or wherever gas is used for heat and power, its importance after its generation goes back to the reservoir that confined the vapor. Electricians have yet to devise any method of storing latent power except in storage batteries of small dimensions. Their most skillful mechanics have not yet produced any apparatus that will hold in reserve the power that is held by a cylindrical receptacle 300 feet in diameter and 230 feet in height, so that, as a great reserve, the gas holder is the vital and important factor in the industrial and social progress of the century.

There are now under construction two holders whose immense cubical area is fairly well illustrated by pictures, but even these do not adequately convey the immensity of the undertaking, and they are of the latest and most improved design of the Bartlett-Hayward Company, a firm which has been in existence for seventy-five years and began the construction of gas holders in the early seventies. For the last ten years this firm have been by far the largest constructors of this class of work and of other gas-works apparatus of any other engineering establishment in the United States, and, as far as progressiveness is concerned, in the world.

Holder No. 1 is under construction near Kingsbridge, New York. The bottom of the tank was successfully lowered on January 6th and was as important, in its class, as the launching of a great ship. There was no smashing of a bottle and no ceremonies other than those of a mechanical nature in which the higher officials of the company were deeply interested. This great reservoir is to be of 10,000,000-cubic-feet capacity. It is adjacent to the New York Central & Hudson River Railroad, north of 207th Street on the bank of the Harlem. The tank into which the lifts will telescope will be 251 feet in diameter and a little over 46 feet in depth and composed of riveted steel plates. The bottom is built up of three-eighth-inch lap-riveted plates, except in the outer annular course, where the metal is five-eighths of an inch in thickness and where double-riveted butt-strap joints are used. Around the rim is an 8x8x1 inch curb angle for connecting the bottom and the first course of wall plates. Compared with the vat-like wooden holder of one hundred and fifty years ago this gas holder looks like Goliath standing alongside of an inhabitant of Lilliput.

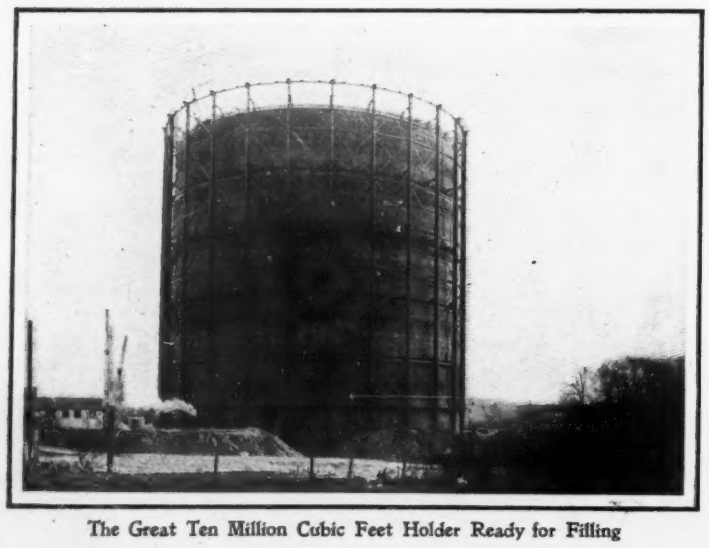
Holder No. 2, which is under construction at Newtown, is farther advanced in construction than the holder at Kingsbridge. Its capacity is the same, as well as the general plan of construction. The capacity of each of these tanks is 17,000,000 gallons of water. The bottom rim plates are the heaviest plates of this character of material that ever have been turned out by any rolling-mill in this country or Europe. The largest rivets in the tank are 1⅛ inches in diameter and when the structure is completed its height from tank bottom to the top of the guide frame will be 271 feet. These great gas holders have been designed not only to withstand gas pressure, but also to resist the wind pressure which might be produced by a hurricane of 100 miles velocity, when the holder is fully inflated and one-half of the crown loaded on the leeward side with snow, weighing five pounds per square foot.

Lowering the Tank Bottom of the Gigantic Kingsbridge Gas Holder

The third gas holder is of 5,000,000-cubic-feet capacity, but the principal interest in the construction of these mighty envelopes of force is centered in the construction at Kingsbridge and at Newtown.

Interesting as the gas holder is, considered by itself, the operation of its installment is of particular attraction to mechanical engineers. The bottom of the tank rests on a level foundation of concrete, and since it would be impossible to rivet the plates together, when lying upon the foundation while being assembled, they are supported on blocking 30 inches high. As soon as the riveting is completed and the curb angle and the angles for attaching the interior permanent frame to the bottom are in place, the blocking is removed and the immense plate lowered slowly to its foundation. For the successful achievement of this mechanical feat it is necessary that there shall be an absolute uniformity of movement over the entire area and that the apparatus be so perfectly jointed that no part can be caught under the bottom after it is bedded. The entire procedure of operation and the visibility of machinery must be such that there can be a continuous inspection during the entire progress of lowering. The uniformity of this operation is demanded not only because sags and risers might develop stresses for which the joints have not been calculated, or produce a permanent set and distortion, but also because unequal lowering is likely to throw the jack-screws out of line, with the consequent danger of dropping the bottom. The engineers in charge of the operation at Kingsbridge have had the benefit of studying all previous accidents of this character, so that they are well buttressed against any similar mishap with the lowering apparatus, which in this case consists of 39 jack-screws distributed around the rim and 148 distributed over the entire bottom, each of the latter supporting an area of about 15x20 feet.

The most careful watch is kept on these jacks, and the moment one is found out of plumb, operations are discontinued until it has been slacked off, straightened, and again screwed up to the height of the other jacks. ***



The Great Ten Million Cubic Feet Holder Ready for Filling

SITE OF LARGE NEW OFFICE BUILDING
DYEING AND FINISHING MILLS
BOX FACTORY
THROWING, UPHOLSTERY AND DRESS GOODS WEAVING MILLS
SPUN SILK MILLS
STORE HOUSE
VELVET MILLS
MACHINE SHOP
RIBBON MILLS
* SITE OF NEW THREE-STORY SPINNING MILL, 400 X 100

CHENEY BROTHERS

A WOMAN never looks her best except when she is well dressed. Without proper apparel she is like a superb picture without its frame. But, suitably arrayed, her attire is the epitome of the skill and toil of an army of devoted artists, inventors, explorers, sailors, farmers, artisans, laborers. Thousands of workers have wrought to make a setting worthy of so fine a picture.

Consider only one item of the array—her gown—whether it be of shimmering silk or lustrous satin. In what remote corner of Europe or deepest secluded mountain nook of Asia did the dull worms spin the cocoons whose frail filaments furnish the beginnings of her shining garment! And with what patient cunning has the miracle been wrought that transformed the filaments into a vestment that seems like a creation from another world! Not only are rare artistry and imagination employed, but an amount of labor and capital incredible to any mind until one has actually seen and heard the multitude of toilers spinning, dyeing, weaving, finishing, engaging in the hundreds of processes by which the raw material emerges as the completed product. In one establishment alone—that of Cheney Brothers, silk manufacturers, at South Manchester, Connecticut—more than four thousand men and women are employed. They work in factories, whose floor space, if all could be set side by side, would cover twenty-seven acres of ground. The amount of money invested in the business, including ground, buildings, stock, machinery, inventions, processes, etc., runs well up into the millions of dollars. The output is considered the best and most diversified in the United States and includes practically everything that can be made of silk. To spend a day in this great plant is like visiting a land of enchantment in which kindly genii are forever weaving gracious gifts for the children—especially the daughters—of men. The magnitude of the work done is overwhelming; the delicacy of craft and fineness of imagination used in the processes give the beholder a new respect for the powers of the human mind.

To trace back to the beginnings of this vast factory of magic one must recall the silkworm craze that raged throughout the Atlantic and Middle Western States fourscore years ago. Two hundred years earlier there were skilled silkworm raisers in Virginia, and in 1649 a modest Englishman, who published in London a pamphlet entitled *A Perfect Description of Virginia*, wrote that it was better to raise silk in that colony, where mulberry-trees were so plenty, "than to fetch it as we do from Persia and China, with great charge and expense and hazard, thereby enriching heathen and Mahumetans." Many attempts were made to raise silk on American soil. A colony of French experts tried their best in Virginia and failed. In other colonies and States there were many failures. In the early '30's the silkworm-mulberry-tree craze was at its height in America, and it looked as if the "heathen and Mahumetans" would quit being enriched at our expense. Five of the eight Cheney brothers, then living at the site of the present town of South Manchester, went extensively into the promising business in Connecticut, New Jersey, and Ohio, little guessing the trials they must undergo or how triumphantly the realization would far exceed their most ambitious dreams. In 1835 they began to import and raise mulberry-trees and silkworms. The tenderness of the trees under the stress of American climate and the high cost of American labor as compared with the cheap labor of the "heathen and Mahumetans" eventually brought the enterprise to disaster. Yet not without hope. In 1836 one of the brothers began manufacturing silk in a small way. The first move toward incorporating a silk-manufacturing company was the establishment of the Mount Nebo Silk Mills on January 9, 1838. Little or nothing was done, however, in the actual manufacture of silk until after the failure of the mulberry-tree business in the early '40's.

In 1842 the brothers had twenty-seven persons in their employ. In 1845 their payroll for the year amounted to $12,407—and their mill was run by an undershot water-wheel with the six-foot fall of a small brook. This developed about two horse-power—one-fifteenth of the power of the ordinary automobile of to-day, to run the entire mill! And, curiously enough, most of the capital for the new enterprise was furnished by two of the brothers who did not engage actively in the business—John and Seth Cheney, artists and engravers on steel. Joseph Clark and Frank Arnold also brought financial assistance and became partners in the company.

The small silk mill had a hard struggle for existence during the first few years. Frank Cheney invented a machine for the more perfect making of sewing silk, which proved successful and helped the young house toward prosperity; but the first distinct triumph was in the making of spun silk grosgrains which were almost indestructible. An elderly woman recently entered a store in a small Connecticut town where a salesman for the company happened to be.

"Have you any of the old Cheney Brothers grosgrains?" she asked. A bolt was unrolled before her.

"Yes," she said, smiling—"yes, that's it. I had a dress made of that twenty-odd years ago. I've washed it and ironed it and turned it again and again, and the longer I had it the better it grew."

The greatest popularity of that class of silks was during the '50's and the time of the Civil War, although many are loyal to it to this day. The house has a kind regard for it, too, for it is one of the foundations upon which a great business was built. It was in 1854 that The Cheney Brothers Silk Manufacturing Company was incorporated with a capital of $1,000,000. The title of the concern was later changed to Cheney Brothers. The growth has been steady. There were, for example, 500 employees in 1870; to-day there are more than 4,000. It would be difficult to find a house in which a higher degree of mutual trust is felt between employers and employees. There were 2,700 employees in 1900 and ten years later 1,120 were still with the company. Allowing for deaths, marriages, removals, etc., this leaves a very small percentage who have voluntarily left the company's employ. The company sells to its people land upon which they build comfortable homes. The company and the employees mutually maintain a benefit association which grants relief in case of sickness, accident, or death. The company long ago adopted and still maintains a just pension system.

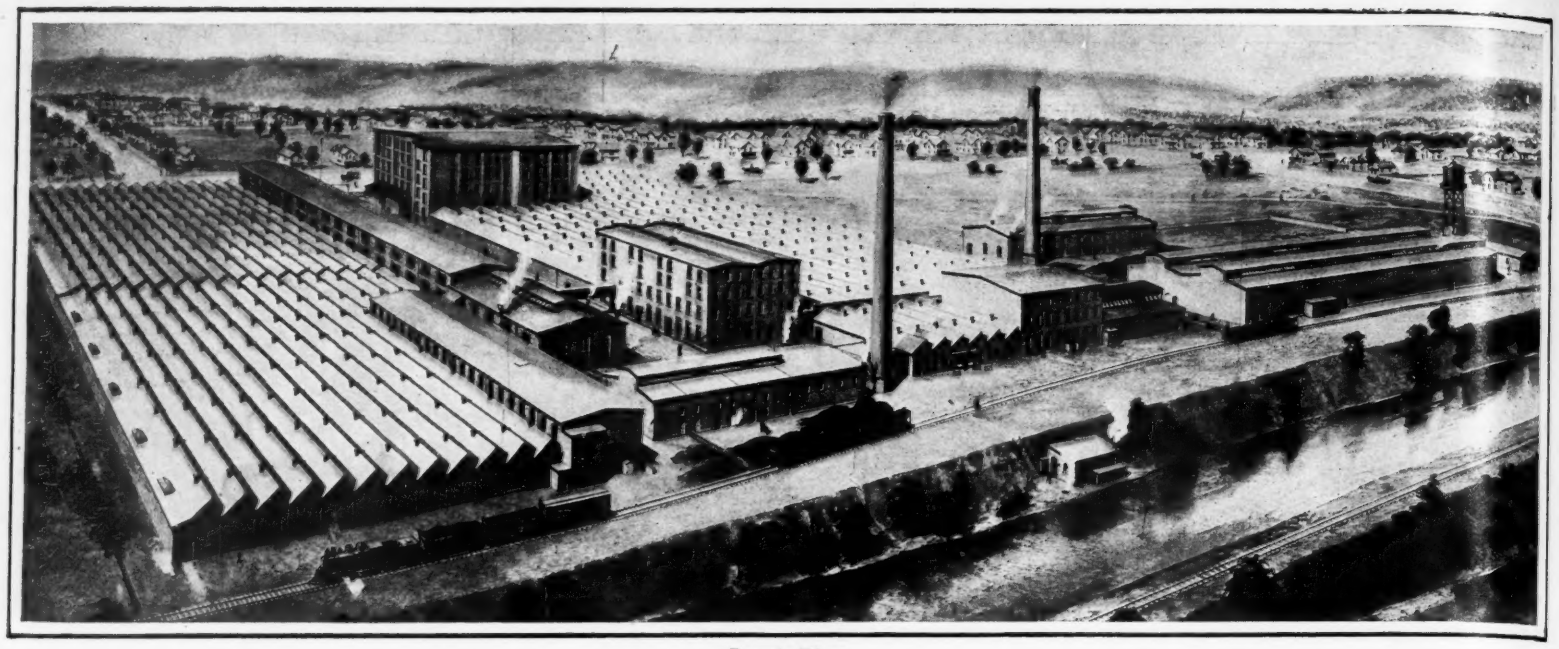
Evidence of the zeal and industry and success with which the business is carried on, the hearty good-will existing between the company and its employees, is in the very air of South Manchester. The town lies upon the crest of a long and gently sloping hill. The factory of Cheney Brothers dominates the landscape. Its enormous buildings crown the undulations of the southerly slope of the hills, and the gigantic main chimney is a landmark for miles around. Facing the factory from a hillcrest one-third of a mile long, over rich green lawns dotted with stately elms and clumps of flowers, are the homes of the members of the company. On other hillcrests near by are the homes of the employees—hundreds of them; handsome, neat, well kept; truly a spotless town, each house with its own lawn and flowers and vines. The factory is the heart of the picture, and the homes of the owners and employees are the borders. And throughout the great domain there is not one fence, nor so much as a hint or vestige of a fence. Lawn runs smooth and unbroken into lawn everywhere, and the only signs of divisions are the trim sidewalks and well-kept streets. The picture seems, somehow, to emphasize the relations that prevail in this community. And the conditions that exist in the factories themselves—the scrupulous cleanliness, the abundant light and ventilation, the automatic fire-doors and sprinklers, the exclusion of elevator shafts from workrooms, and the other provisions for safety and comfort on every hand—all give evidence of the same spirit.

Nowhere else in America is there so extensive and complete a silk manufactory as this. And European factories are not for a moment to be compared with this plant in scope. Abroad, a silk manufacturer may not even own a mill. In any case, he manufactures usually in only one branch of the industry. He may have only an office. He buys raw silk from a broker, sends it to a throwster to be thrown, to a dyer to be dyed; purchases his spun silk from a spun-silk manufacturer and has that dyed; sends these materials to a weaver to be made into cloth; or, if the goods are to be piece-dyed or printed, sends to the weaver the thrown silk and the gray spun silk. After the goods are woven, if they are yarn-dyed, they are sent to a finisher to be finished and packed. If they are to be printed or piece-dyed, they are sent to the printers and dyers, and then to the finishers to be finished and packed. After the goods are made they are generally sent to a commission house to be sold. The "manufacturer" throughout the whole transaction may have had only one room and not one mill. In this country the average silk manufacturer weaves his own goods and at least has a weaving mill. Very few of them have more, sending out their raw silk to be thrown and dyed, and their goods to be dyed, printed and finished.

Cheney Brothers are the only company in the world that deals in all branches of the industry. They buy the raw silk from China, Japan, and Italy, make their own spun silk, do their own yarn dyeing, and weave all classes of goods—yarn-dyed or piece-dyed dress goods, decorative goods, upholstery goods, ribbons, neckties, velvet ribbons, plushes, and velvets—as well as selling yarns for use in the trades, to woolen manufacturers, cotton manufacturers, and electrical concerns. There are other manufacturers who in one branch of the industry may be larger, such as in the weaving of one particular class of goods; but the business in the aggregate is the largest in the world for one concern.

To give an accurate picture of the magnitude of the plant, without seeming extravagant, is most difficult. It would be difficult, for example, for a good walker to make a complete tour of the factory buildings in one day—to say nothing of stopping to look at the various processes of throwing, spinning, weaving, dyeing, printing, washing, finishing, inspecting, packing, and shipping. The company uses the water from a great artesian well and from four large reservoirs which have a total capacity of more than four hundred millions of gallons—and is already acquiring a new water supply miles away. The factory actually uses more water than Meriden, a thriving manufacturing city of thirty thousand inhabitants. Every drop of the supply has to be of the very purest, or it would be useless in the processes of silk manufacture. Olive-oil soap of the most exquisite purity and softness, such as the daintiest beauty might be glad to enjoy, is consumed by the hundred of tons in the frequent washing to which the silk is subjected. As for the processes themselves, nothing but the actual sight of their moving mysteries, glowing colors, and perfect co-ordination of mind, muscle, and machinery can do justice to the fascinating magic of silk manufacture.

The new selling office of Cheney Brothers, at Eighteenth Street and Fourth Avenue, New York City, is one of the largest and handsomest and best equipped in the world. The decision of the company to consolidate their four stores in one establishment up-town led the silk trade of New York in this direction. The original salesroom was in Beaver Street in the '40's; then was removed to Canal Street; then was in charge of A. T. Stewart, in his Leonard Street and Chambers Street establishments. Cheney Brothers opened their own sales department in Broome Street in 1877, and only recently removed to the southeast corner of Eighteenth Street and Fourth Avenue. There they have collected in one place the selling departments of all the mills in their establishment. There are 45,000 square feet of floor space on three floors, perfectly lighted and excellently arranged for the showing of goods expeditiously and accurately. ***



Passaic Plant

FORSTMANN & HUFFMANN CO., PASSAIC, N. J.

THE firm of Forstmann & Huffmann was established in 1803, in Werden-on-the-Ruhr, Germany, by the great-grandfathers of the present partners. The founders were not novices in the manufacture of woolens, having spent the greater part of their lives in that business. Their ancestors, too, had been engaged for generations in the business, and, according to family tradition, members of the family belonged, in mediæval times, to the local guild of weavers and cloth-makers.

The new firm, which from the outset was very successful, was greatly aided by the formation, in the third decade of the last century, of the German Customs Union, and later on, under the strong protective system of the German Empire, the enterprise achieved greater and greater success.

The products of the firm soon found a profitable market at home and abroad. The foreign business always received the firm's most careful attention. In the early fifties, at a time when the trip to the United States had to be made in primitive side-wheelers, a branch was opened in New York.

The trade of Messrs. Forstmann & Huffmann with the United States comprised the finest woolen and worsted fabrics, their trade-mark "F & H" becoming widely and favorably known all over the country. Business with the United States continued to grow steadily in volume, until at the beginning of this century the need became apparent of finding some means of satisfying more fully and more promptly the requirements of the American trade. As the best solution of this problem it was decided to establish a mill in the United States for the production of fine fabrics.

The Forstmann & Huffmann Co., Passaic, N. J., was founded in 1904, with a capital of $750,000, by and under the personal direction of Mr. Julius Forstmann, who had been a partner of the Werden house since 1897. Mr. Forstmann had already made several trips to the United States and was thoroughly familiar with conditions here.

Building was begun in Passaic in 1904, and in the fall of 1905 the mill began operations. Experience soon proved the practicability of the new Company's aim, viz., to manufacture in America woolens as fine in quality as any produced in European mills. In establishing the Forstmann & Huffmann Co. it was realized that the true road to success in this direction was to duplicate, on American soil, a European mill, thoroughly equipped on European models, and use throughout the same material and supplies as in Europe; then, wherever it seemed feasible, gradually to adapt the new enterprise to American conditions.

The enterprise, being unique in its kind in the United States, the demand for its output grew steadily. A special factor in the immediate success of the Company was the ability to make extraordinarily quick delivery of goods, as against the time taken to order and obtain them from Europe, with the attendant danger of finding styles, shades and qualities, when they reached here, no longer in demand. A further advantage was found in the rapidity with which duplicate orders could be filled in those goods which proved especially popular.

Before the end of the first fiscal year the plant proved to be too small for the demands upon it, and its capacity had to be greatly enlarged. For this purpose the capital stock of the Company was increased to $1,250,000. During the panic of 1907 the mill was employed to its fullest capacity, and in February, 1908, the capital stock was again increased to $1,650,000. Still the demand for the Company's output continued to grow, and with this extension of business came the need for the erection of a worsted spinning mill—primarily to supply the Company's own requirements in yarn—and also for the construction of additional weaving and finishing facilities for fine worsteds for men's and women's wear.

The further history of the Company was one of steady development and expansion. In March, 1910, to provide for further additions and extensions, the capital was increased to $3,500,000, and, including reserve funds and undivided profits, now amounts to about $5,000,000.

The mills to-day comprise two separate plants, located in Passaic and Garfield, N. J., on the banks of the Dundee Canal and Passaic River, respectively, with their own railroad sidings. The plants cover an area of about one million square feet, while the total ground area is about two hundred acres. The buildings are constructed wholly of brick and stone, all rooms are light and airy, and the plants are fitted throughout with automatic sprinklers. In the equipment of its mills the Company made the most careful selection of machinery from the best models of America, Germany, England, France and Belgium. No fewer than 2,500 operatives now find employment in the different departments.

The Company controls the entire processes of woolen and worsted manufacture, buying the wool in the primary markets, and sorting and washing the wool, spinning the yarn, and weaving, dyeing and finishing the cloth in its own mills. It also markets the goods direct through its own selling departments.

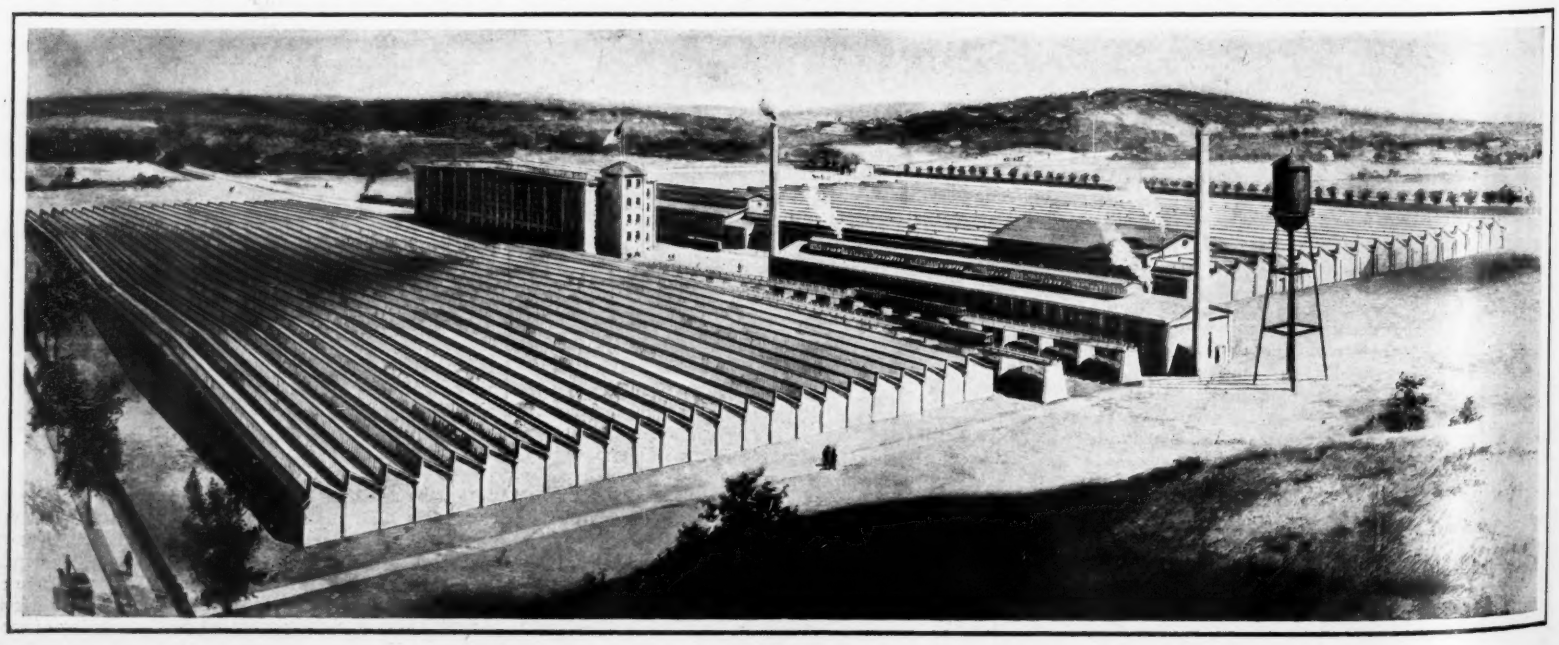
Besides the fine "F & H" broadcloths, which are everywhere recognized as the standard of quality, the Company manufactures all kinds of high-grade worsteds and woolens for men's and women's wear, and its fabrics are sold in all parts of the United States. The Company's styles and shades are generally considered as leading the fashion for the American market in those fabrics of which it makes a specialty.

Besides spinning, in its own worsted spinning mill, the yarn used by it in the manufacture of cloth, the Company also manufactures, for sale, the finest dry-spun worsted yarns (French system) of all qualities and counts. Its yarns have already acquired, in the short time they have been on the market, an enviable reputation for excellence.

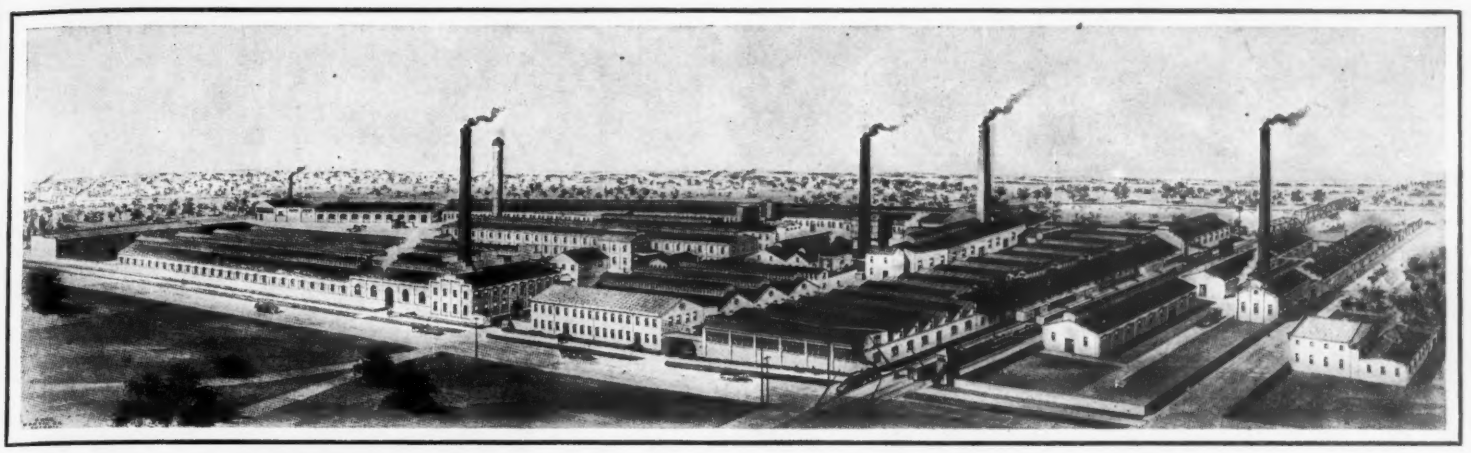
While the work of the Company is, of course, highly specialized and each department has its definite sphere marked out for it, yet a strong spirit of unity and co-operation prevails throughout. Communication between departments has been carefully systematized. Each plant has its own superintendent, who is entrusted with all general technical matters relating to machinery, buildings, etc., and also with the employment of mill operatives and other work people. In charge of each manufacturing department is an experienced head, and, wherever necessary, the work of each department is again divided and placed under the supervision of a competent man.

The executive offices of the Company are situated in Passaic, N. J., while the selling departments are in New York City—the Dress Goods Department at 114 Fifth Avenue, the Men's Wear Department at 334 Fourth Avenue, and the Yarn Department at 477 Broome Street.

The Forstmann & Huffmann Co. has furnished, in a marvelously short time, a striking proof of the ability to manufacture in the United States fabrics as fine in every respect as any produced in Europe. As the imports of such European goods amount to millions of dollars annually, the Company, by thus making possible the production, on American soil, of large quantities of high-grade cloths which formerly could only be obtained from Europe, has made a positive contribution to the permanent wealth of the country. The investment here of a large amount of capital, with the consequent enhancement of values in the whole neighborhood of the Company's mills; the purchase, from dealers in the immediate vicinity and elsewhere, of great quantities of supplies; the employment given to several thousand hands, who, with their families, number ten thousand people and add enormously to the purchasing power of the community—all these factors constitute a direct and absolute economic gain for the country, especially when it is remembered that the greatest part of the money expended in the manner indicated remains in the United States and does not go abroad, as would be the case if imported goods were bought instead of the Company's fabrics. And judging by the development of the Forstmann & Huffmann Co. thus far, a continued enlargement and extension of the undertaking, with a corresponding increase of all the economic benefits conferred by it, may confidently be expected for the future. ***



Garfield Plant



WEIDMANN SILK DYEING CO.

TO speak of a studio that covers twenty acres of space is to challenge the imagination almost beyond its capacity. Yet that description fairly fits the Weidmann Silk Dyeing Company's vast plant at Paterson, New Jersey—the greatest silk-dyeing establishment in the world. Silk is the finest and the most beautiful, as well as the most enduring, of all textile fabrics, and they who work in it are true artists. No matter how ingenious or charming the patterns into which the weaver fashions it, silk depends upon the dyer to give it light, life, color—to develope its highest attractive power.

In the studio that covers so great a space that a stranger would soon lose himself in its many divisions, among immaculate white walls and under roofs of glass, the visitor sees more wonderful things done to the delicate but durable floss than he ever dreamed were possible. Colors literally innumerable are given to the stuff. There are, for example, some two hundred grades of black alone—although some wise men hold that black is no color at all. Imagine, then, to what formidable lengths the entire color catalogue of this establishment may proceed, the endless variations to which each element in the spectrum is subjected.

The founder of the Weidmann establishment was actually born in a great European dye-house, a descendant of many generations of silk dyers. Upon the foundation of Old World skill and tradition there has grown the present gigantic installation, which handles every day twenty thousand pounds of silk, receives daily ten tons of the raw yarns and sends out daily into the world ten tons of the yarns dyed in every hue of the rainbow that fashion demands. More than 1,400 men are employed.

Figures alone stun the mind; yet without using them no adequate picture can be had of the size of this great enterprise. Of the many buildings in the plant there are but five that are two stories in height. The rest are of only one story, since so much water is used in the various processes that lower floors would always be leaked upon. Moreover, so much light is needed that the work must be carried on beneath roofs of glass. Fifty-three artesian wells upon the company's estate of 109¾ acres supply most of the water used, and this is not pumped up, but driven up by compressed air in the modern fashion. The tanks have a storage capacity of 1,000,000 gallons, and, besides the product of the wells, the company draws millions of gallons daily from the pure upper reaches of the Passaic and pays for it to the extent of thousands of dollars a year. The company uses 6,000,000 gallons of water each day. All the water used is filtered and brought to a state of purity. A huge battery of eighteen boilers furnishes the heat and power used in the various buildings. The silk yarn receives the dye in long tanks of purest copper. This metal alone, if reduced to ingot form, would be worth $350,000.

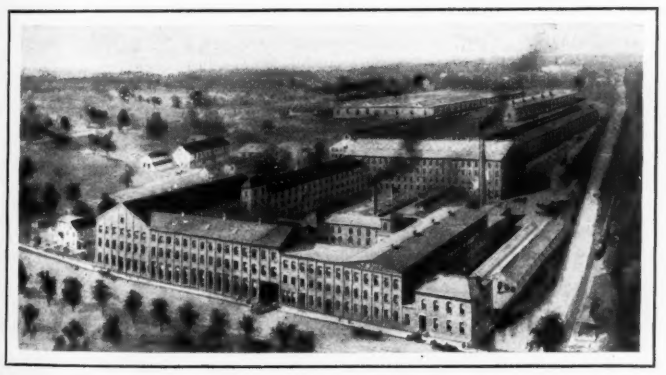
Many of the acids used to fix the dyes unalterably in the silk are so powerful that they can be conveyed only through rubber tubes. These acids do not injure silk in the least. Neither does the great heat in the calenders hurt it. Yet the fiber must be zealously guarded against any chance of abrasion. The sticks upon which the silk is suspended in the vats are the product of a peculiar thorn found in the Swiss and French mountains. The bark has been stripped from these, but the knife has never touched their inner surface, which remains smooth and hard as ivory, and is not affected by moisture. Each color has its own sticks, and these are never used for any other; and two hundred thousand are consumed annually. The wooden lining of those vats, in which acids are not used, is of the enduring cypress from the swamps of Florida, the boards being in one piece and fifty feet in length. Like the sticks, the cypress wears smooth and hard, instead of roughening, or swelling, under the action of heat and moisture. Certain of the centrifugal machines have perforated metal sides, and the silk before being placed in these is wrapped in cloths. In others, the sides are lined with rubber, for in them the silks are on the sticks.

Dyeing silks is by no means the mere steeping of the yarns in color. Again and again during the complicated process the stuff is washed. For the dyeing the skeins are immersed in great vats of boiling water into which the liquid soap has been injected. Liquid soap? Yes; and of the very purest quality. It is made in a great reservoir across the Erie Railroad tracks from the dye-houses and piped underground for hundreds of feet. In the soap factory there are large vats of olive-oil and others of caustic soda, etc. These elements are assembled in the soap reservoir, blended in proper proportion and then piped to the washing vats far away. Similarly thousands of gallons of lemon juice are piped to serve their turn in the dyeing processes.

Weighting the silks by forcing them to absorb bichloride of tin is another process that seems like magic. The fiber easily takes on one hundred and fifty per cent. of its own weight when required. Then the fluid is drained off into shallow vats, the tin precipitated by the addition of other chemicals, so that it is gathered up as a rich brown muddy sediment. This is dried and smelted, and all the tin is recovered.

But these are mere hints of the wonders done in the mammoth Weidmann establishment. It is one of the marvels of the silk world.⁂

R. & H. SIMON



Mills at Easton, Penna.

THE silk industry in the United States is of but recent development. It dates practically, after many failures, like so many other industries, from the end of the Civil War, which abolished slave labor and made free labor supreme.

During the colonial period England encouraged her colonies to grow and produce raw materials, which were transported to the mother country and there turned into the finished products. High premiums were offered for the planting of mulberry-trees, the leaves of which furnished the silkworm with food. Gradually the premiums dwindled lower and lower, till at last they ceased altogether. This made mulberry plantation in the American colonies unprofitable.

At the end of the thirties in the last century, a revival in the planting of mulberry-trees to furnish the raw material for factories set in. The plantations were mostly located in the South and the border States. However, a severe frost destroyed the trees and the silkworm became a victim of disease. This was the last attempt of producing the raw material for silk manufacture in the United States. After the Civil War the protective tariff became the policy of the United States for the purpose of paying the war debts and encouraging infant industries. This gave also the start for silk production. As all attempts to produce the raw material in the United States had been failures it was found necessary to protect the enterprising manufactures in the endeavor to import the raw material from abroad, manufacture it here into the finished product, and compete with foreign importations in the home market. This was, of course, attended in the beginning with many difficulties, especially as it was hard to find the necessary executive experts and the skilled labor.

However, all obstacles were gradually overcome — thanks to capable captains of industry who risked capital and labor—and to-day the silk industry is on the basis of still importing its raw material from abroad, one of the most flourishing and important in the country.

This is, in short, a summary of the historical development of the silk industry as a whole. It is proper to illustrate this with a typical case. As a good instance, the development of the establishments of R. & H. Simon, in Union Hill, N. J., and Easton, Pa., may be quoted. The two brothers, Robert and Herman, are natives of Frankfort on the Main, Germany, and came to this country at the end of the sixties. They both had executive ability, inventive talent, and an artistic taste. After having become acquainted with the ways and circumstances of the new land, they entered into the partnership of R. & H. Simon and established a three-story factory in Union Hill, N. J., in 1874. This was but a modest beginning considering the present enormous extent of their business, but they grew up with the country. Robert Simon had invented a new power loom, which they tried and which was found to turn out a faultless fabric. This, up till then, had never been done in the United States and it gave them at once a great reputation in the whole trade. They started with seventy power looms, which were able to produce a perfect piece of grosgrain silk, and three thousand spindles. Altogether they employed two hundred hands.

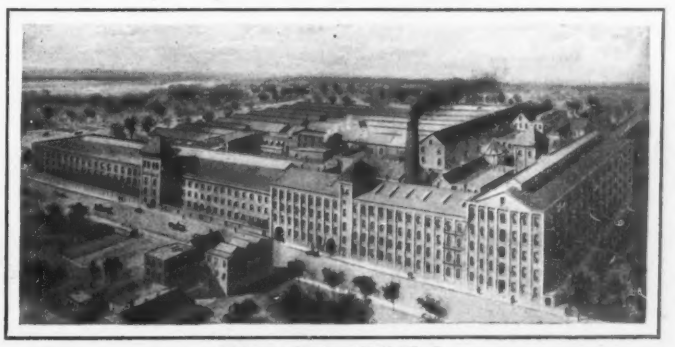
In those days weaving was still done to a great extent by hand, and the Simon brothers handled, in addition to the goods manufactured in their power factory, the product of one hundred and sixty-five of hand weavers. With increasing mechanical devices, many of which were invented, improved, and introduced by the brothers, hand weaving became obsolete till at last it was entirely supplanted by power weaving.

In addition to the remarkable talent for inventions, the Simon brothers had also a pronounced artistic taste. The time which was not absorbed in the factory, the counting-house, or the laboratory, was industriously employed in the studio where they evolved new designs. They were thus able to make themselves absolutely independent in every branch of business and to compete most successfully with all the foreign importations, even those which came from Lyons in France, where the silk industry has been the pride of the whole nation since the revival of trade and manufacture in the days of the Renaissance. This is all the more remarkable as silk is an article of luxury and subject to the most aggravating fluctuations in style and fashion.

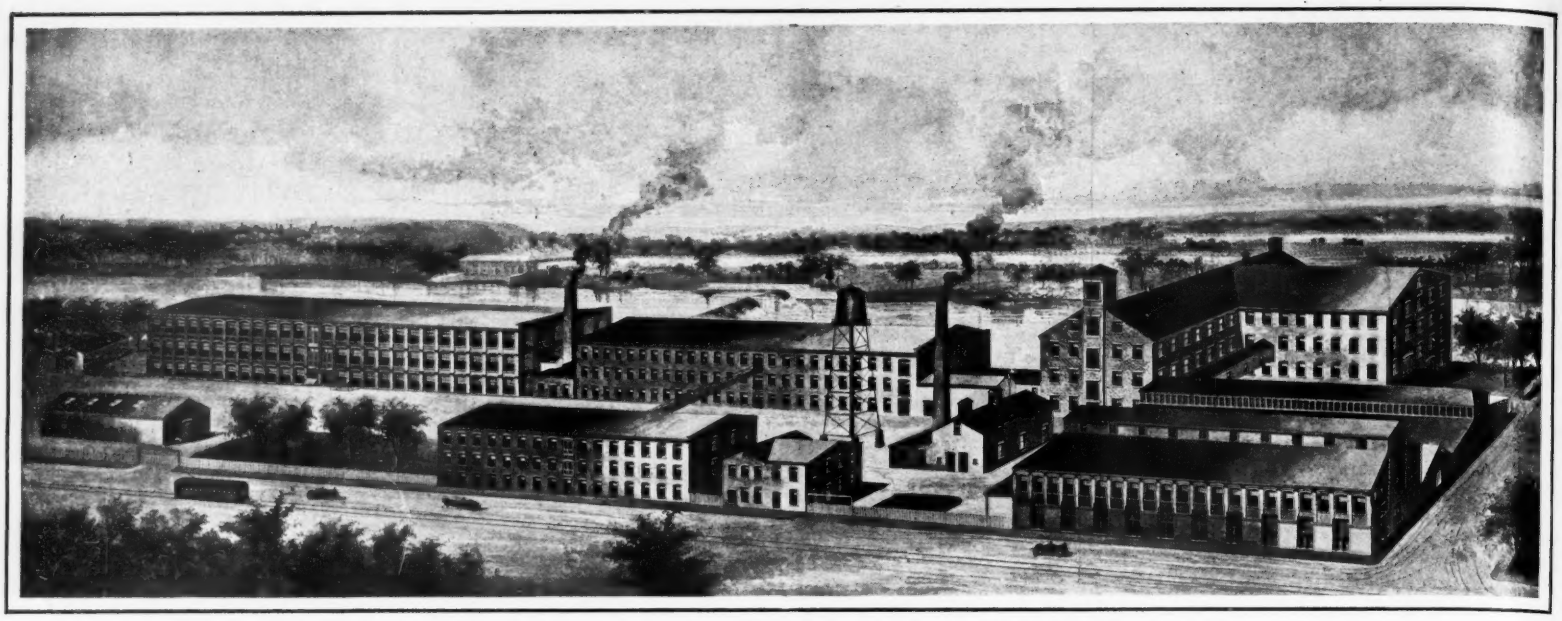
The factory in Union Hill, N. J., grew rapidly. At the present time it occupies an area of fifty-eight city lots. In the year 1883 they started a new plant in Easton, Pa., and this one is now even larger than the original establishment. It occupies no less than nine acres. Altogether, more than two thousand six hundred hands are employed in both factories. The firm is constantly introducing all new improvements and, with this end in view, Mr. Herman Simon makes a yearly trip to Europe for the purpose of studying the latest developments in the silk establishments of France, Germany, Switzerland, and Italy. Mr. Robert Simon died, unfortunately, in the year 1901, in the prime of his life, a victim of his untiring energy and his enormous work. Ever since then the burden of the business has been borne by Mr. Herman Simon.

The silk industry, that is, the artistic production of the most beautiful and the finest fabrics in manufacture, has reached a development in the United States which was not dreamt of a generation ago. True, we still have to import the raw material, but, as far as mechanical silk weaving is concerned, America has become absolutely independent from Europe, and that this has been achieved and that hundreds of millions of dollars which used to be sent abroad remain in the country, and give profitable employment to hundred thousands of industrious people is due, in a great extent, to the enterprise, the energy, the inventive talent, and the artistic taste of Messrs. Robert and Herman Simon.

And great credit is also due to Mr. Herman Simon for his efforts to keep fresh the memory of his lamented brother, who helped to build up establishments of which the whole country may be justly proud. ⁂



Mills at Union Hill, N. J.



Carpet and Rug Works of The Beattie Manufacturing Company at Little Falls, New Jersey

BEATTIE WILTONS

Wilton Velvet carpets.
Wilton Velvet plain solid-color fillings.
Wilton Velvet rugs.

Seventy-five years without a stop this business has been making carpets and carpet fabrics. "Beattie" Wilton velvet carpets for half a century have been, and hold their place to-day, the standard for churches, hotels, theaters, and government work, and especially for private homes. Twice a year new designs and colors are brought out, covering a choice for every purpose.

Beattie Wilton velvet plain solid-color fillings are of the same quality as the carpets, furnished in all and any color desired, are adaptable where a floor fabric is required as a filling in connection with the use of Oriental rugs. Nothing is more effective than some of these beautiful greens for colonial interiors, with white enameled woodwork.

Beattie Wilton velvet rugs are particularly recommended where a rug at a moderate cost is wanted. They are made in fine designs and colorings, such as are only looked for in high-cost Wiltons and Orientals. A wide range of patterns in all sizes gives a selection for any color arrangement. A feature of these rugs, of importance, is that they are absolutely in one piece—seamless. They are not a sewed carpet, with three seams holding four strips together, permitting an uneven wearing off of the pile, owing to the extra thickness where it is sewed. They lie flat and straight on the floor. They do not "kink" or "buckle."

All our goods are made up in the finest designs and colors. The fabric is constructed of the best materials that the world produces. The workmanship is the perfection of three-quarters of a century of experience. The styles do and will prevail. They meet the approval of critical persons. They are distinctive. They are prepared with the hope of making them suitable for people of refinement north, south, east, and west. They give satisfaction.

Our name is stenciled on the back of all our goods. They are carried in the stocks of the best dealers throughout the country. ***

BEATTIE MANUFACTURING COMPANY.

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Peerless Finishing Co.

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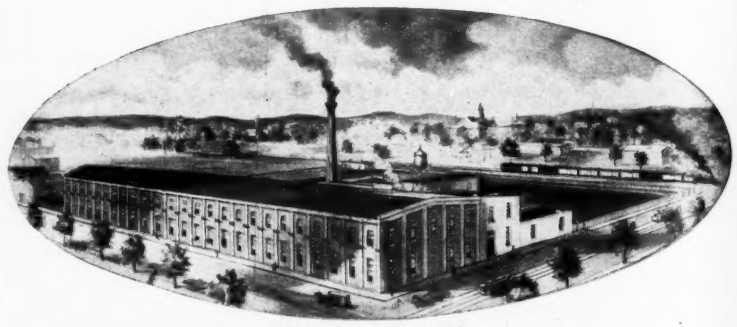


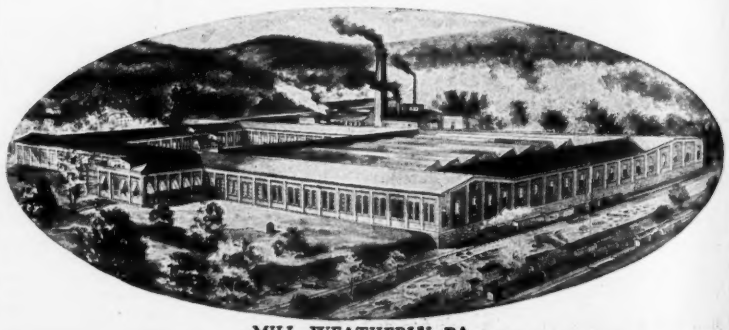
MILL, ELMIRA, N. Y.

The Read & Lovatt Manufacturing Co.

SILK THROWSTERS

Mills at { WEATHERLY, PENN.
PALMERTON, PENN.
ELMIRA, N. Y.

NEW YORK OFFICE, - 445 Broome St.



MILL, WEATHERLY, PA.

How the Buyers were "Buffaloed"

A true story vitally affecting everybody that wears clothes

Last July the cloak and suit buyer of a large western department store went to New York to order his Fall and Winter stock.

This man's ability to forecast styles in cut and fabric was almost uncanny. It seemed intuition with him to anticipate just what would prove a "hit" with the people of his city.

He was a fair judge of woolens, which is a comparatively simple proposition, but when it came to satin linings he was just like everybody else who has not grown up in a silk mill—he was an easy mark.

For many seasons this buyer had been specifying Belding's Pure Dye "Yardwide" Satin linings because he knew that Belding Bros. & Co. were about as reliable as the U. S. Treasury, and could not afford to give other than the best value, because their fifty years' reputation was at stake and their name woven in the selvage of every yard of their linings.

But last July this buyer made his first call on Messrs. **Potash & Perlmutter,** who laid out their sample line and said: "We have a cinch for you this year, Mr. Buyer! Always before you have specified Belding's 'Yardwide' linings. This year we have a yarn-dye lining which would ordinarily make these garments cost more, but the mill had to unload an over-stock, so we bought the 'satin' cheap and can make you the same prices as usual."

Not having grown up in a silk mill, Mr. Buyer didn't know that these linings were loaded with 50% tin to give them a false body and lustre.

They looked good and felt good, so he didn't know that they would soon crack and split. He didn't take into consideration that because the mill was afraid to weave its name in the selvage these linings were about as reliable as an anonymous letter. So he fell for them.

His next call was at **Sammet Bros.** and they gave him the same "treatment," for the mill had unloaded those "phony" anonymous linings right down the line.

The buyer wasn't to blame because he didn't know.

Potash & Perlmutter and **Sammet Bros.** weren't to blame because they didn't know.

But that Buyer is now in a mighty serious predicament because those tin-loaded linings *will* crack and split as surely as the sun will rise tomorrow morning, and while his house may receive but few complaints from their defrauded customers, these same customers will say to their friends: "Oh, never buy a suit at 'So & So's'; I bought mine there last year and it was terribly disappointing."

Now don't you think, Mr. and Mrs. Buyer, and *you*, Mr. and Mrs. Customer, that it is "penny wise and pound foolish" to take unnecessary chances with anonymous linings? Won't it relieve you of a great deal of uncertainty to have an institution like Belding Bros. & Co. back of your linings?

Just read the Belding Guarantee Tag and consider what it means—best value with an unconditional guarantee.

THIS TAG INSURES
THE WEAR OF YOUR LINING.
SHOULD THE LINING GIVE UNSATISFACTORY WEAR, RETURN THE GARMENT TO US EXPRESS PREPAID, TOGETHER WITH THIS TAG AND WE WILL RE-LINE WITHOUT CHARGE.
BELDING BROS. & CO.,
Silk Manufacturers,
526-528 BROADWAY,
New York City.
This TAG is attached to every garment lined with BELDING SATIN

SULPHUR

In Calcasieu Parish, where the main line of the Southern Pacific Railroad shoots across the dreariest swamps of Louisiana, lies the great sulphur field of North America. The land is flat and soggy, its surface for miles given over to dreary rice fields, except for occasional clumps and ranges of still more dreary trees draped with streamers of funereal moss. Here and there one sees a pipe sticking out of the earth, a memorial of the extensive operations in drilling for petroleum carried on many years ago.

In their drilling, the owners of the land found deep in the earth something more valuable than oil—thick, far-reaching deposits of sulphur, practically 100 per cent. pure. The outlines of these thick underground patches have never been exactly defined, but they extend throughout many square miles. Far beneath the black, swampy surface the sulphur lies spread like a rich, thick, yellow blanket.

How to get the sulphur up to the surface of the earth was for a long time a puzzle. Owing to the great amount of water in the surface soil and subsoil any effort to mine the sulphur by the ordinary means of shafts and tunnels was too difficult and too costly to think of; so for many years the great virgin deposit of sulphur lay untouched, while the American industries that required sulphur in their operations were obliged to import the mineral from Sicily or other foreign lands at great cost.

An American engineer at last hit upon the plan that has made the subterranean supply available. This was simply to melt the stuff underground and pump it up in its fluid form. The swamp water did not penetrate the iron pipes used in boring for oil; so the engineer drove down a somewhat larger pipe until its base rested well in the heart of a sulphur patch. Then the drill was withdrawn and the pipe left free and clear.

A jet of superheated steam was sent down the pipe, and thus there was established in the midst of the rich deposit a temperature of more than 400 degrees Fahrenheit, in which the sulphur melted like snow in spring sunshine. When this steam had been driven down under pressure for a few hours all the sulphur within a radius of many yards was reduced to a clear liquid. Then the underground flow of steam was shut off and its energy devoted to the machinery of a powerful suction pump. Very soon the melted sulphur was flowing free as water from the discharge pipe of the pump aboveground. As long as the stream ran free the sulphur was led into a pit prepared for it; and as soon as the flow ceased more superheated steam was sent below and a new flow obtained. This process was continued until all the deposit within reach of the steam was exhausted.

The mining of sulphur at any one shaft is limited only by the distance at which the steam has proved effective. There has been no reason for great economy thus far in the Louisiana deposit, because it is so extensive that ordinary operations at the present rate will not exhaust the supply within calculable time.

As the molten sulphur pours into the pits prepared for it the faintest summer breeze breaks its surface into dancing ripples that make it look like a lake of quivering gold. Soon the mass begins to harden, and within a few hours it is solid enough to support the weight of men and horses and wagons. When it is cool enough to be worked, a swarm of laborers dig into the solid sulphur, pick it to pieces and shovel it into the cars that carry it to market. The Louisiana deposit has been thus worked on a commercial scale since 1904, and each year sees the scope of operations broadened. A spur track from the railroad is kept busy hauling sulphur from the company's plant, and it is distributed throughout the American continent, although most of it goes to the Atlantic seaboard.

There are so many purposes for which sulphur is used that a mere list of them would fill many lines of this page. Every bleaching process demands the use of sulphur. Modern paper-making employs countless tons of it. It is extensively used in the manufacture of cloth; also as a base of gunpowder. Sulphur from the same pump in Calcasieu may be used in making the uniform of a soldier, in the gunpowder that drives a bullet through the cloth and into him, in the germicide antiseptic spray that cleanses his wound, in clarifying the sugar used in his medicine, and in refining the molasses that forms part of his diet during convalescence and after he has been nursed back to health.

And these are but a few of the employments of the mineral, for it is one of the most industrious servants of man, and it appears in countless forms. The paper bleacheries consume more of it than any other industry, but hundreds of other manufactures demand their share. And if the inventive engineer had not devised the simple but highly ingenious plan of melting the deposit far underground and pumping it up to the surface, it is likely that the great Louisiana deposits would have lain unused for ages. As it is, the steam sulphur miners draw their spoils from the depths as a bee sucks honey from the flower, and meanwhile the rice harvests and the trees and mosses on the surface swamps continue undisturbed. ***

The Defender Mfg Co's
SHEETS AND PILLOW CASES
are produced under the finest possible industrial conditions in the world's greatest factory of its kind at Avenue C, 13th to 14th Street, New York City. These goods are torn from the piece,—not cut,—insuring straight edges after laundering. They look, wear and launder like linen, and are positively unequalled at their cost for genuine Service Value. Wise housewives will insist upon having only The Defender Mfg. Co.'s Sheets and Pillow Cases.
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Selling Agents for
COTTON GOODS
GREY PRINTED
BLEACHED COLORED
Originators of Soiesette and Flaxon

The National Silk Dyeing Company

THE magnitude of the silk-dyeing industry in America is realized by few people outside of the trade. Prior to 1908 it was in the hands of a number of concerns, the foremost of which have since combined to form the National Silk Dyeing Company. The latter is the largest of its kind in the world, operating six plants in Paterson, N. J., one in Allentown, Pa., and another in Williamsport, Pa. It has already become a factor of great importance in the commercial world, and it is instructive to trace its early beginnings and the scope of its present operations.

One of the first dyers in this country was Charles Morrell, who, in 1854, started a small establishment in Hamburgh Avenue, Paterson, N. J. Subsequently, he moved to Philadelphia. He was followed by Brown & Meyer, and, in 1860, by E. B. King & Company. During the ensuing years many firms came into existence, most important of which were The Auger & Simon Silk Dyeing Company, Lotte Bros. Co., and the Emil Geering Silk Dyeing Company.

It had long been felt that greater results could be accomplished by a joining of forces, and about three years ago six concerns went into a combination, to be known as the National Silk Dyeing Company. Four plants in Pennsylvania and New Jersey were purchased later. The new company commenced operations on a large scale on January 1, 1909. It had been incorporated with a view to concentrating the work in as few plants as possible and reducing the cost of the product to the consumer, and its steadily increasing trade has made this possible beyond all expectations, while the quality of work done is a distinct advance upon that of the old independent firms.

The dyeing of silk is so highly specialized an art that a brief account of the process cannot fail to be interesting. At Paterson, N. J., the National Silk Dyeing Company maintains the most important center of the industry in the entire world. About 5,000 men are employed; from 30,000 to 40,000 pounds of skein silk and 200,000 to 300,000 yards of piece silk are dyed every day as the combined output of the six plants in that city.

The raw material comes in skeins containing from 5,000 to 10,000 yards. It has first to be boiled to get rid of a certain glutinous substance with which new silk is permeated. A washing process follows, and after all impurities have been removed the silk is partially dried and taken to the dyeing-room.

After passing through the dyeing-room the silk is steam-dried, and is matched with samples as a final color test. It is then submitted to additional drying methods. A hydraulic machine is used, or the skeins are hung on poles and allowed to remain for a certain period in a steam-heated room. In order to obtain a high lustre the silk is rolled on frames and dried in a special machine.

Piece-silk dyeing and printing requires a different process from the above, and the National Silk Dyeing Company devotes an entire plant in Paterson to this branch of the business. The silk is boiled off on rolls and then put through the operation known as "giving body in the piece." The National was the first company to do work of this kind in the United States, introducing the process in November, 1909. Prior to that date it was confined to the French factories. The dyeing and drying operations are comparatively complicated, as it is necessary to guard against the silk shrinking from 2 to 5 per cent. It is stretched on frames while the moisture evaporates, and in some cases is subjected to a pressure of several thousand pounds to the square inch.

A first-class printing department has been installed in this plant, and the company is now producing high-grade work in a great variety of designs. In some cases the pattern is impressed directly on the silk, while by another process the color is withdrawn from parts of the material.

The reconciling of competing interests and the placing of the different plants under one management have already proved of great advantage to the silk-dyeing industry, and have fulfilled the prediction made at the time of its formation that it would develop into the most important in the silk trade in Europe as well as in this country. The officers of the National Silk Dyeing Company include representatives of nearly all the concerns that entered the combine, and are as follows: president, C. L. Auger; vice-president, Emil Geering; secretary, Frank Maass; treasurer, Charles E. Lotte; assistant treasurer, J. C. Duffy; chairman of the executive committee, Edward F. L. Lotte. ***

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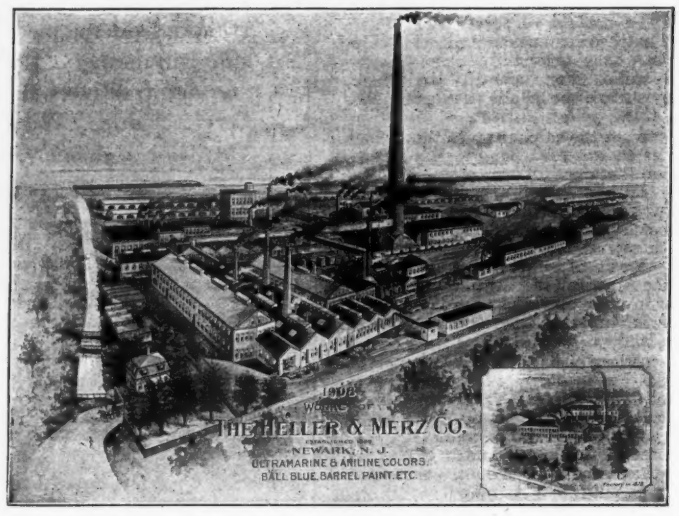

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SAMPLE CARDS UPON REQUEST

The Pattern Card in Jacquard Weaving

A GREAT and indispensable branch of the silk-weaving industry is the preparation of the Jacquard pattern cards, which are used on looms producing figured goods. These cards are strips of variously perforated cardboard, commonly about 3¼ inches wide by 16¾ inches long, the perforations of which represent the pattern to be woven. In use, they are sewed or laced together edge to edge, forming a flat endless chain which passes over the Jacquard section of the loom, where the perforations of the cards control in an ingenious manner the ever-changing arrangement of the warp to form the pattern.

The utmost exactness in the cutting of the pattern card is an absolute necessity. It follows, therefore, that the means used for producing these cards must be of the highest mechanical excellence, else no certainty could be felt that the designer's pattern would be faithfully reproduced. Originally the cards were perforated by a hand punch acting through a perforated master plate. This plan, however, has long since given way to a series of very exact perforating machines, by which all stages of the work are performed, from the blank card to the completed chain or pack.

The initial step in preparing a pack of pattern cards is performed on the Piano Machine, the operation of which bears some little analogy to the playing of a piano. It is a very precisely built machine, embracing a number of vertically guided round steel punches, controlled by finger keys, and operated by a pedal stroke. A single design may require hundreds or even thousands of cards, each of which must be cut individually on this machine. Within recent years the piano machine has been adapted by the makers to drive by power, which not only lightens the labor of operation, but also increases materially the average daily output.

It is next necessary to lace the cards closely together to form an endless chain or band. Much hand labor formerly spent on this work is now saved by the almost universal use of the Automatic Lacing Machine. This machine embodies an adaptation of the chain or lock stitch sewing-machine principle, the lacing cord being applied by an automatic needle-and-shuttle mechanism. Holes for the lacing cord are cut on the Piano Machine while cutting the figure holes, also a larger hole at each end of the card known as the peg hole, which engages with the pegs that propel the card pack. The cards feed into the lacing machine consecutively and automatically, passing to the needle section on a conveyor chain set with guide pegs. Having been laced together, they are delivered at the rear of the machine in a systematic stack. A further function of the lacing machine is to lace together packs of blank cards for the Repeating Machine, in which case the lacer also cuts the lace holes and peg holes in the cards as they pass toward the needles.

Perhaps the most interesting as well as the greatest labor-saving machine used in preparing Jacquard cards is the Automatic Repeater, for rapidly duplicating packs of cards from an original pack, when it is desired to operate more than one loom on goods of the same pattern. Here especially is absolute accuracy demanded, in order that the original pack may be duplicated any required number of times with exact fidelity. The repeater is a very compactly built machine, embracing a multiplicity of parts, among them a separate steel punch for every possible hole in the cards to be reproduced—seldom less than six hundred and often more than double that number. Its cutting section is very powerfully constructed, for the repeater cuts an entire card at one stroke. Both packs of cards, the finished pattern pack and the blank pack, are fed simultaneously into the machine, where, by an elaborate and ingenious selecting mechanism only such of its punches as correspond to the holes of each card are brought into operation. The machine will duplicate at the rate of fifty or more cards a minute, automatically changing the arrangement of its punches in rapid succession to conform with each card presented. Notwithstanding its thousands of active parts, the repeater performs its intricate work smoothly and continuously, without hitch or error, in a thoroughly trustworthy manner.

The use of Jacquard cards and the machinery for producing them is by no means confined to the weaving of silk, but has been extended to the manufacture of cotton, woolen, and linen goods, carpets, rugs, laces, upholstery fabrics, woven labels, and many textile novelties.

As the requirements of the silk industry gave rise to the unique line of machines for producing Jacquard cards, it is quite fitting that their manufacture is carried on as one of the important industries of the Silk City. The inventors and makers are the firm of John Royle & Sons, who have been engaged in the machine business at Paterson for more than half a century, and have become widely known as manufacturers of high-grade mechanical specialties for several very exacting lines of trade. ***

RAILWAY EFFICIENCY

Why Our Railroads Excel Those of Other Nations.

MR. W. M. ACWORTH, the English railway economist, has recently returned to England after making a two-months' study of the railway situation in the United States. His reviews are held in high esteem by the great bankers of England and the Continent, and, as a result of his investigations, he concedes to our railroads the highest degree of efficiency.

He says: "In the number of tons per car, cars per train; in the fullest utilization of locomotives; in the obtaining of the greatest measure of result for each unit of expenditure, they are not equalled by the railways of any other nation."

There is some gratification in being able to create so favorable an impression, especially in the unbiased mind of a man conceded to be "the highest authority on the railways of Great Britain." The organization and maintenance of the forces responsible for this high state of efficiency "obtain the greatest measure of result for each unit of expenditure" by careful consideration and selection of all material used in the various departments of railway service. Two of the most essential details requiring careful consideration are the lighting and heating of passenger, baggage, and mail cars.

The traveling public of America have been educated to expect the comforts and advantages while traveling which they are accustomed to receive in their homes. The enormous area of our country, with trains running without change from the Atlantic to the Pacific coast, and from Canada to the Gulf, requires systems for artificial lighting and heating which can automatically maintain desired results for days and nights with the least attention. Cars cannot be taken from a through train for repairs without seriously affecting the service. It is, therefore, important to provide each car with systems maintaining efficient light and comfortable heat for an extended number of days while passing through variable climates with minimum attention and at a minimum cost.

Pintsch light has been for many years and is to-day the standard lighting for railroad cars. It has brought car-lighting from the unsatisfactory period of oil lamps to its present state of high efficiency. Great improvements have been made from time to time in the methods of burning Pintsch gas, but the introduction of an inverted mantle, constructed to withstand the severe service of train-lighting, has been one of the greatest improvements in railway equipment ever made. For years the flat-flame gas-burners were used on almost every car in railway service in this country, and gave apparently satisfactory service, but The Safety Car Heating and Lighting Company, which controls this system, was not content with this showing.

Economy was always conceded as one of the many advantages which warranted the use of Pintsch gas as a car illuminant when this gas was used in flat-flame burners; but when the Pintsch mantle is used the illumination, compared with the flat-flame Pintsch burners, has been increased threefold, and this with less consumption of gas. To be more exact, the Pintsch mantle gives 100-candle-power illumination at a cost of a trifle more than one cent per burning hour. We are apt to wonder why a company should give three times its former quantity in trade for less money, but this company has always aspired to give the best attainable, which has been a factor in making its success.

Electric lighting for railway cars has received some consideration by the railways and is advocated by some as a more modern method of lighting for railway cars than gas, but the few advantages of electric light scarcely compensate for locomotive fuel consumption, labor for maintenance, and complications involved in its use. Pintsch lighting is to-day recognized as the illuminant best adapted for car-lighting purposes. The Safety Car Heating and Lighting Company supplies the system of electric lighting which uses a pulley on the wheel axle connected by a belt with the electric generator suspended underneath the car. This system is familiarly known as the B. C. S. car-lighting equipment.

Comfortable car temperatures are to-day maintained automatically, even when a car passes through extreme variations of outside weather conditions. This is accomplished by a system of car heating known as Thermo Jet. The trainman or porter on cars equipped with this system has access to a regulating dial, which he sets for a certain temperature. The temperature is then maintained automatically by the volume of steam admitted to the radiating pipes in the car by the Thermo Jet Injector. This system is also a product of The Safety Car Heating and Lighting Company, and when considered together with its Pintsch Light and B. C. S. electric light, it places this company before the railroad and traveling public as deserving of continued success in its chosen field. ***

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The Robeson Process Company

THE invention of glutrin—a product manufactured and handled by the Robeson Process Company—must be regarded as one of the most important of recent events in the industrial world. It has had the result of revolutionizing modern methods of road building, and at the same time has been beneficial to the paper trade. For glutrin, which is a by-product of wood pulp consisting principally of resin and pitch, has proved to be an excellent binder for macadam and dirt surfaces; and as it is derived from material hitherto considered useless, is a tangible addition to the wealth of the entire country.

In the making of the pulp that forms the basis of the ordinary paper of commerce, there has for years existed a most extravagant loss, amounting to over one-half of the gross lumber. Broadly speaking, the raw wood consists of cellulose and lignone. Cellulose is insoluble, and passes almost unchanged through the chemicals of the pulp maker. The lignone, however, is dissolved and forms a sticky brown liquid that manufacturers have been forced to throw away. As it has been difficult to prevent it from reaching the mill streams and polluting same, it has long been regarded as one of the problems of the trade.

For a considerable period much money was spent in fruitless efforts to discover a use for lignone, and thereby eliminate the great waste that it entailed. Progressive pulp makers throughout the world turned their attention to the matter, and the beginnings of success came several years ago when a method was tested for handling the crude lignone, then known as waste sulphite liquor. These early tests culminated in the invention of glutrin, a substance that has proved of value in the very diversified fields of steel making, tanning and road building, while crude alcohol can also be extracted from it.

As an aid to modern road building, the success of glutrin has been remarkable. It has none of the objectionable features that seem to be part and parcel of the oils and tars that have been generally used during the past few years. To name but two or three of its more obvious merits: it does not lie on top of the road, but sinks into it; it does not necessitate the closing of a road while being applied; it has no rotting effect upon rubber tires; and dust impregnated with it will not smudge.

With glutrin on a macadam road, the stones are bound tightly together and the flow of the natural binder greatly increased, so that the road body is made more compact and the surface rendered absolutely smooth. These improvements naturally decrease the cost of repairs and reduce dust to a mimimum. In 1909 the New York State Department of Highways experimented with glutrin on about six miles of macadam road. The latter was in first-class condition, excepting that it was inclined to ravel and was rather dusty. A few months later the department reported that the new treatment had been most successful in laying the dust, hardening the road and preserving it; and it is intended to extend the use of glutrin to other highways in the State.

On the average dirt road, consisting of gravel, sand or clay, the results are, perhaps, even more astonishing. The uneven surfaces—one day deep in mud, and the next all dust—become smooth and compact; wet, but not muddy, on rainy days; dry, firm and dustless in fine weather. A road treated in this manner is for most purposes equal to anything that could be achieved with the expensive stone construction of the macadam builder. The first cost is but one-quarter that of stone, and annual repairs figure out at about one-half.

Innumerable tests have been made with glutrin on earth roads throughout the country, and the reports show that all have proved satisfactory. In 1909 an experimental stretch, about 1,300 feet in length, in the town of Middlefield, Otsego County, N. Y., was treated under the supervision of the Bureau of Town Roads of the State Highway Department. The existence of a quicksand bottom in this region resulted in the road being often impassable, particularly in the spring and fall. After being drained, shaped and regraded, the roadbed was covered with gravel from four to six inches in depth. Five barrels of glutrin were then sprinkled over the 1,300 feet of surface. Traffic was not interrupted, and on the second day four more barrels were applied. This completed the treatment, and, although the road has since been subjected to a heavy travel, it is in as good condition to-day as when it was constructed. The entire surface is free from dust, smooth yet resilient, and therefore easy for horses to travel.

In consistency, glutrin is not unlike maple syrup. It is soluble in water, and is usually applied in a diluted form. It readily assimilates with any moisture, and dew, fog, rain-water or melted snow serve to increase its penetration, instead of forming pools or soaking through it and damaging the roadbed.

The makers of glutrin—the Robeson Process Company—have operating plants at Au Sable Forks, N. Y., and Covington, Va. They maintain warehouses in all the principal cities of the United States, and their business is rapidly attaining a magnitude that it would have seemed rash to predict when their product was first placed on the market. The demonstration of how all of a country's resources may be utilized is an even greater service to humanity than conservation, and the Robeson Process Company deserves full credit for converting the lignone of the pulp mills into a new and valuable article of commerce. ***

R. C. Williams & Co.

THE rise to the pre-eminent position held by the house of R. C. Williams & Co. in the wholesale grocery business of the United States is another illustration of the apt saying, "Tall oaks from little acorns grow." It is also commensurate with the ever-increasing and amazing growth of New York in the past and at the present day.

R. C. Williams & Co. are now established in thoroughly up-to-date premises at 56–58–60 Hudson Street. Here they have every convenience for the dispatch of their enormous business, divided, as it is, into twenty distinct departments, each complete in its line, and each under the supervision of an expert.

The inception of this great modern enterprise is identified with the year 1811, which was a most important one in the historical life of New York city. At that time the Hon. De Witt Clinton was Mayor of the town, and it was during his incumbency that a bill was introduced in the Legislature investing a body of commissioners, among whom were Robert Fulton and Chancellor Livingston, with "Power to manage all matters relating to the navigation between the Hudson and the Lakes." The passing of this bill resulted in the beginning of the construction of the Erie Canal at a cost of nine million dollars, a sum that in those days seemed fabulous. The rapid growth of New York was an inevitable outcome of the Canal. The city soon ranked second in size to Philadelphia, and, with increasing commerce, finally took its place as the metropolis of the western hemisphere.

It was at this period that, under the firm name of Mott & Williams, two young men, one Richard S. Williams, the other John Mott, entered on the uncertain path of the wholesale grocery trade. They located at No. 167 Fly Market Street (now Fulton Street), opposite the principal public market of that day. Here, in a selling and warehouse space of 1,500 feet, the firm opened for business. By the present magnificent condition of the house, it appears that there was ample warrant for the venture; but were it possible for R. S. Williams, the founder, to view the marvelous advancement made from the small scale on which he started, he would be both amazed at, and justly proud of, the result. His wildest dreams of success have been more than justified, under the skilful guidance of the men at the helm to-day.

R. C. Williams & Co. is not a corporation, but is a co-partnership to this day; and the personnel of the firm consists of Edwin H. Sayre, William L. Juhring, Arthur P. Williams, and Francis J. Dessoir.

In 1888 the firm moved to the corner of Hudson and Thomas Streets. Its history is full of remarkable achievements. Particularly is this the case in connection with the fire of 1894, which destroyed the Hudson Street building. This drew from the grocery trade all over the country hundreds of messages congratulating Mr. Sayre on his amazing energy and celerity in opening business on the following morning at 131 to 137 Franklin Street. On the afternoon that the fire broke out, he summoned the other members of the firm and the heads of the several departments, and by dint of almost superhuman effort throughout the entire night the business was kept going without interruption. This was a remarkable showing on the part of Mr. Sayre and his associates. It was well worthy of the praise so generously accorded by the business world.

A retrospective glance will at once show the wonderful change which has gradually taken place, both in the life of New York and in the commercial status of so widely known a concern as R. C. Williams & Co.

The population of New York in 1811 was only 17,500, while that of Brooklyn was only 5,000. The entire city possessed but two banks—The Bank of New York and The Manhattan Bank. One of the rules imposed by financial institutions was that no merchant who smoked during business hours could get discount at a bank.

Broadway, in 1811, terminated to the northward in a triangular area fronting the old Bridwell Jail. The City Hall was completed in the year 1811, and City Hall Park was then described as "a beautiful grove in the middle of the city." Rapid transit was unheard of. Battery Green was the fashionable promenade, and was thickly planted with trees.

It is a far cry from that period to the present day of lofty skyscrapers, enormous transactions in business, the telephone and telegraph, the subway, and the other countless advantages of this very rapid age.

The expansion of R. C. Williams & Co. has kept pace with the upward movement of New York. A century ago, the concern was a small business, handling a few staple articles; to-day every country in the world is represented in the daily business routine. Stimulated by competition, and making use of every modern method that is compatible with commercial probity of the strictest sort, to-day the firm has back of it that stability that is better than any other asset. Its record, though mellow with age, has never been assailed, and of this fact the buying public has not failed to take note. ***

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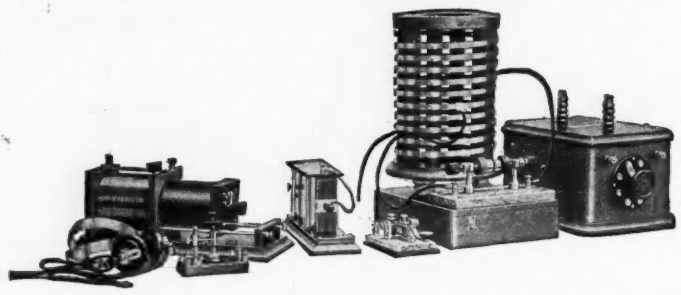

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Botany Worsted Mill

THAT "there is a divinity which shapes our ends" is manifest to all—to the successful, the unsuccessful, as well as the "plodders who have their respective rows to hoe"—and in no sphere is this Shakespearian quotation more trite and right than in the combination of circumstances that placed this, the greatest of all local industries, in our midst, and helped thereby to make our town more conspicuous before the eyes of the world and to give employment to approximately five thousand men and women, thus becoming one of the greatest factors of our phenomenal growth, manifest at each recurring census year.

The stranger within our borders is impressed by its magnitude, and a brief outline of its phenomenal development may not be amiss at this time. Coming here but twenty years ago, almost unheralded, the eyes of the then twelve thousand people looked on casually, almost disinterestedly; but the first move was so stupendous that more than ordinary interest was, perforce, shown; and as the army of artisans and workmen transformed money into plans, then realities, in the original investment of $1,000,000 the end of this beginning was most impressive and convincing.

The credit of bringing the industry was due to two circumstances—the first being the revised tariff, which made it advisable to locate in America, owing to the ruling of the Treasury Department of the United States, which rendered a decision that "worsted was wool," and the importation, which was mainly from Germany, being thus prohibitive, necessitated the establishment of manufactories in this country. The second circumstance is due to the keenness of a Passaicite, a thorough, long-headed business man; and, as the initiative was thus taken, many other industrial lines followed, and Passaic has grown phenomenally and substantially, thanks to its many advantages and facilities.

After completion of the original mills, about one thousand men and women were given employment; and, as the business grew, added structures, all of the most modern type, were found necessary, until, at the present time, upwards of two millions of dollars have been expended in construction and equipment alone, and the original capital of one million dollars has been increased to three million six hundred thousand dollars.

The character of the properties is of the highest type, and the equipment most modern known, the management realizing that it is only under the best conditions, sanitary and otherwise, that the best results can be obtained and maintained.

Under such conditions the several thousand employees work and promote their interests in the performance of their best efforts, for the corporation has outlined and successfully demonstrated that working with their hearts as well as hands and brains combine to produce the best goods and most gratifying returns to employees and employers, and by so doing have enjoyed the broad-gauged, down-to-date policy of the company, who some time since established a profit-sharing system for the faithful; and the added earning-capacity, thus spurred, has demonstrated most gratifyingly that there is merit in co-operation of the sort that binds employer and employed more closely.

The plant covers about thirty acres of land, and the combined floor space and grounds total the area of a small town.

The products—fine dress goods, cloths and goods for men's wear, and fine worsted yarns, dry spun—reach all the marts of the world, and have a reputation that is distinctive and ever growing in favor.

So much for the buildings, their expense, the enormous investment, the products, the co-operative plan, and the progress made; but it is mainly due to the men at the helm, who so adroitly perfected the organization that has demonstrated its executive and administrative ability, and thus placed the Botany Worsted Mills in Passaic.

Their products are disposed of mainly through their New York offices and also through offices in every large city in the United States. ***

J. Spencer Turner Company

AMONG the comparatively small number of commercial houses that have been doing business in New York City for more than a century, J. Spencer Turner Company occupies a prominent place. It saw the inception of the cotton-duck industry in the United States, has been connected with same during the entire period of its existence, and now handles about two-thirds of the product manufactured here. It has done pioneer work in developing the trade to its present stage, and has at the same time built up an honorable reputation for itself, the value of which as a business asset is hard to estimate.

The firm was established about 1810 under the name of Brinckerhoff & Greenough, with headquarters in John Street. As Fox & Polhemus, and later as Theodore Polhemus & Co., its headquarters were in Broad Street. In 1866 and 1870, respectively, Messrs. E. A. Brinckerhoff and J. Spencer Turner were admitted to partnership. At the last-named date the firm took the name of Brinckerhoff, Turner & Polhemus, and a few years later moved to Duane Street, where it is still located. On the retirement of Mr. Polhemus the firm became Brinckerhoff, Turner & Co., and in 1897 it was incorporated under the name of J. Spencer Turner Company.

With its main office in New York City, the financial centre and the principal shipping-point of the United States, J. Spencer Turner Company also maintains branches in Boston, Chicago, and other large cities in this country, and in London and Manchester, England. It is especially well equipped for handling the large business which it carries on, and has established itself firmly in the foreign-export field.

For a number of years it was exclusively a duck house, but since the incorporation of the present company it has also dealt in sheetings, drills, crashes, grain-bags, bunting, yarn, rope, etc. It has the exclusive sale of all brands of the Consolidated Cotton Duck Company, the latter comprising the largest combination of cotton mills in the country. Practically all cotton duck is put up under brands, and the sale of such well-known brands as "Woodberry," "Mt. Vernon," "Ontario," "Aretas," "Perfection," "Bear," "Selkirk," "Hartford," "Prairie," etc., is controlled by the J. Spencer Turner Company. Its duck is used in almost every conceivable line of business, the bulk of it being placed with railroads, steamship lines, manufacturers of harvesting machinery, carriage and automobile concerns, and for tents, awnings, hose, and belting purposes, etc.

In addition, the firm is direct selling-agent for a number of Eastern, Southern, and Canadian mills. Its present officers are as follows: Thos. M. Turner, president; E. A. Brinckerhoff, Wm. H. Evans, M. C. Taylor, vice-presidents; E. A. Brinckerhoff, Jr., treasurer; and H. M. Turner, secretary. ***

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Seth Thomas Clock Co.

THE Seth Thomas Clock Co. have their headquarters at 15 Maiden Lane, New York, and their factories are located at Thomaston, Conn.

Seth Thomas has become a synonym, meaning "Perfection" in the world of clocks, and the trademark of this famous firm of clock-makers—"ST," which are just the initials of the celebrated founder of this extensive and world-famous business—stands for all that is best in watch or clock making.

More than that, he has been an example to the countless number of clock factories which have arisen in this and many other foreign countries. He has set the standard which all must follow. His hand has been the guiding star toward a fine accurate and reliable timepiece. In fact, what Sir Titus Salt means to the mill-workers of the world, what Edison means to electricity, Rothschild to finance, Joe Jefferson to the theatre world, so stands Seth Thomas to the manufacture of clocks.

If any one doubts this or thinks it overdrawn let him turn to his Appleton's Biographies or the Encyclopeda Americana; in there he will find quite a notice of this famous man who founded the Seth Thomas Clock Co. and which includes the statement "he had manufactured every kind of timepiece from a delicate watch to a tower clock."

It's not often such an honor is paid to a simple manufacturer, but you remember the time-honored saying, "an industrious man can stand before kings."

Seth Thomas is regarded in the industry of clocks as a name suggesting sagaciousness, integrity, accuracy, and that all-compelling force which in an undefinable sense is called genius. That has been cited time and again as a quality born in a man, but probably the historian and philosopher Carlyle's opinion is nearer the mark as he describes it when he says: "It is the capacity for taking infinite pains with anything one has to do." Seth Thomas took infinite pains in making clocks—result, success.

It will not be out of place here to briefly review the beginning of Seth Thomas up to the formation of the splendid business now on a firm basis which he left to his grandchildren, who are proud in keeping up the fine standard of the great reputation handed down to them by their distinguished progenitor, Seth Thomas, in the making of clocks and watches.

The Seth Thomas Clock Co., of 15 Maiden Lane, New York, and Thomaston, Conn., was founded by Seth Thomas in 1813.

Seth Thomas was born in Wolcott (the next town east of Plymouth), and first began the clock business with Silas Hoadley in the eastern part of the town of Plymouth; Seth Thomas then located in the western part of Plymouth (then known as Plymouth Hollow) and this name continued on all the clocks until the early 60's, when the legislature of Connecticut divided the town into two parts and named the western side—where his works were—"Thomaston" in his honor.

He passed away in the year 1859, just five years after he had incorporated the company in 1854.

In two more years it will have attained the ripe age of 100 years.

It is now under the able management of the grandsons and one great-grandson of the original Seth Thomas, who are maintaining the splendid reputation made by him.

In 1884 the Seth Thomas Clock Co. built a watch factory which proved quite an addition, ornamental and otherwise, to Thomaston, Conn. It was unique in the perfect ideal sense to the needs of making a watch and thoroughly up to date in every respect. They have kept it up to the mark ever since, for almost every year finds something new utilized in the delicate operation of manufacturing watches. In 1887 began the output of the new factory now completed.

To-day, in normal times, they are making 450 a day, which is about 140,000 a year, and in normal times the output of clocks is about 1,000 a day, or per year 311,000. The hands employed number about a thousand, and probably a more painstaking, efficient, and clever lot of skilled mechanics could hardly be found anywhere. Many of them have grown gray in the service of the Seth Thomas Clock Co.

The output consists of cheap nickel clocks which retail at the wonderfully low price of $1.00, running up through various grades of lever and mantel clocks, wall clocks and regulators, to large tower clocks ranging from $600 to $6,000.

The export trade is a very important feature with the Seth Thomas Clock Co. Its salesmen cover the inhabitable globe. It's an easy matter to run across one of them in the most distant parts of the world.

One of the best markets at present is India. Japan was formerly a very large one, but now the wily little yellow men are making their own and putting clocks out which closely resemble the product of this company. Indeed, they have paid the company the doubtful honor of putting its name upon them, and they are making a strong and earnest effort to encroach upon the company's trade in China and India.

On the continent of Europe the Seth Thomas Clock Co. had a large business in nickel clocks, but the Germans, who sent men over here to work in the various factories of Connecticut, men who returned to form companies manufacturing on the same lines, have taken the whole of this business, being able to undersell Americans. ***

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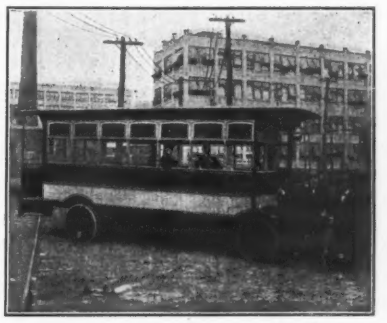

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Interborough Rapid Transit Company

THE Interborough Rapid Transit Company operates the present Subways in Greater New York and the lines of the Manhattan Elevated Railway Company, which it holds under lease. The main, or Broadway Line of the Subway extends from Atlantic Avenue, Brooklyn, to the entrance to Van Cortland Park, a distance of 17.53 miles, while a branch known as the Lenox Avenue, or West Farms, Division extends eastward from Ninety-sixth Street to the entrance to Bronx Park at One Hundred and Eighty-first Street. The first excavation for the Subway was made in front of the City Hall on March 24, 1900, and the system was formally opened to the public on October 27, 1904.

The total amount of capital invested in the Subway is, in round numbers, $96,000,000. Of this amount the city furnished $53,000,000 and the company $43,000,000. There are 4,250 employees on the weekly pay roll of the Subway, the monthly pay roll amounting to $260,000. When the Subway was first opened it was estimated that its maximum capacity would be 400,000 passengers per day For the fiscal year ended June 30th last the lines averaged 737,000 passengers per day, while on two occasions over 1,250,000 passengers have been carried in a period of twenty-four hours.

The Subway system comprises 81.94 miles of single track, over which 1,900 trains are operated daily. The station platforms have recently been lengthened, so that ten-car express and six-car local trains can be run. During the rush hours, which are from 7.30 to 9.30 A.M., and 4.30 to 6.30 P.M., both express and local trains are operated on the short headway of one minute and forty-eight seconds. During the rest of the day the expresses run on a two-and-one-half-minute headway and the locals on a three-and-one-half-minute headway. Center side doors have recently been installed on the express trains, which has added materially to the capacity of the tube and considerably reduced the time of station stops. There are four lines in the Elevated system—Second, Third, Sixth, and Ninth avenues—with a total single trackage of 118.03 miles, over which 3,354 trains are operated daily. On the Second Avenue line the maximum headway is two minutes; on Third Avenue fifty-five seconds; on Sixth Avenue two minutes, and on Ninth Avenue one and one-half minutes. For the fiscal year ended June 30th last the four Elevated lines carried on an average of 805,000 passengers daily, which is in excess of the number of passengers carried by the Elevated lines before the Subway was opened. There are 6,050 employees on the weekly pay roll of the Interborough accredited to the Elevated lines, while the monthly pay roll amounts to $363,000.

The company now has a proposal before the public authorities looking to the building of extensions to its system, which will immediately reach four boroughs of the greater city, and eventually extend under New York Bay to the Borough of Richmond, at Tompkinsville, or St. George, Staten Island.

These suggested additions and improvements mean a total contribution of private capital by the Interborough Rapid Transit Company toward relieving the present traffic congestion, of $133,824,500. In addition to completing the present Subway system, as it was originally laid out, the company has planned many new lines, and obligated itself to operate any future extensions the city may see fit to build in connection with the present system, all for a single five-cent fare.

The president of the Interborough Rapid Transit Company is Theodore P. Shonts, who resigned the chairmanship of the Isthmian Canal Commission to accept the position.***

Schedule K and Its Record

WOOL manufacturing in America forms a great part of the group of textile industries which rank second only to iron and steel in the total value of their product, and first in the number of wage-earners employed. More than eight hundred thousand American farmers are engaged in the raising of wool for American factories, and a million families owe their livelihood to the activities involved in the manufacture and distribution of cloth and the manufacture of clothing.

The average ad valorem rate of duty in the present tariff is about 41 per cent. Some protective duties range as high as 60 or 70 per cent. where there is particularly severe competition from the ill-paid wage-earners of Europe or the Orient. The actual protection enjoyed by wool manufacturers under Schedule K is, therefore, not very much above the average protection bestowed on American industries in general by the tariff law. The wages paid in American woolen mills, according to statistics gathered in the present year, are twice the wages paid for similar work in British mills and two and one-half times the wages paid in the woolen factories of the Continent.

Imports both of the raw wool and of the finished woolen fabrics are so large as to make Schedule K the second richest revenue producer of the entire tariff. There were imported in the calendar year ending December 31, 1910, which was an unfavorable year for manufactures, $36,102,447 worth of foreign wool. The year before—a period of brisk prosperity in manufacturing—the imports of raw wool had been $55,530,366.

In the calendar year ending December 31, 1910, there were imported $21,587,496 worth of manufactures. In the year before the imports were $22,058,711. These were the amounts on the basis of the low foreign valuations. The duty-paid value of these goods was considerably more. It is safe to say that in round numbers one-tenth of all of the wool manufactures used by the American people are even now brought from abroad.

Under fifty years of Schedule K a wonderful economic evolution has been accomplished. In 1860 the total value of American wool manufactures of all kinds was only $73,454,000. In 1905 it was $380,934,003. In 1860 only $38,814,422 were invested in the industry, which in 1905 had a total capitalization of $370,861,091.

American mills are now capable of making, and do regularly make, the widest range of fabrics, including fine cloths and dress goods, that dispute the market with the finest and costliest fabrics of the most famous foreign looms.

Political foes of the American wool manufacturing industry in this country and abroad have endeavored to disparage the worth of American fabrics, and to declare that the use of shoddy and of cotton as a substitute for wool was on the increase in this country. This statement is an unqualified falsehood. It has just been authoritatively stamped as such by the Federal Bureau of the Census in a preliminary report on woolen and worsted manufactures, issued from Washington. This report shows that the quantity of wool consumed in making American woolen and worsted fabrics increased from 330,179,000 pounds in 1899 to 474,751,000 pounds in 1909—a gain of 44 per cent. In the same period the quantity of raw cotton consumed in these same fabrics decreased from 40,045,000 pounds to 20,055,000 pounds, or 50 per cent., and while the amount of cotton yarn used increased from 35,343,000 pounds to 39,169,000 pounds, or 11 per cent., "the net result," as the Census Office declares, "is a decided decrease in the amount of cotton used as a material by wool manufacturers."

Moreover, the same official investigation shows "a marked decrease in the use of shoddy." In 1899 the total amount of shoddy consumed in the woolen and worsted mills was 68,663,000 pounds; in 1909 it was only 53,621,000 pounds, "a decrease," states the Census report, "all the more significant when the growth of the industry is considered."***

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Harper's Magazine

The Heart of the Metropolis

To hit the bull's-eye is far better than merely to land on the outer target. Whoever comes to a city, whether to live or to make a visit, would much rather be at the very heart of things than dawdling around the edges. In New York, for example, with its five millions of people, there are hotel accommodations for more than half a million. Yet there are few hotels of which it can be said that they are at the very heart of things, at the center of the great city's activities, whether of business or of amusement.

Show to any man a map of New York City, with the magnificent new terminal of the Pennsylvania Railroad between Thirty-second and Thirty-fourth Streets, the McAdoo tubes, bringing to Broadway and Thirty-third Street the traffic from other Southern and Western roads, the various surface, elevated, and underground lines to and from all parts of the city, meeting and crossing one another at the little park called Greeley Square, the middle of Manhattan—ask where the heart of the city is, and he will inevitably point to Greeley Square. And right there, in Broadway between Thirty-second and Thirty-third Streets, stands the Hotel Martinique—new, yet managed by men of long and ample experience; spacious, equipped with the utmost comfort and elegant luxury; great in size, yet cozy as a home; situated at the very center of the busy metropolis, yet looking out upon the open space of Greeley Square, with its green turf and gay flowers.

From the front door of the Martinique one may take a car for any part of the city. Within five or ten minutes' walk may be found many of the greatest retail stores of the world; only one block to the eastward is Fifth Avenue, devoted to palatial shops, the treasure-houses of jewelers and art dealers, and the headquarters of the arbiters of feminine fashion. The Metropolitan Opera House is within a few minutes' stroll of the Martinique; all the principal theaters are situated hardly more than a stone-throw away from its portals. Broadway, the main artery of the great city, perhaps the most wonderful street in all America, passes the door. A Fifth Avenue motor 'bus goes south, past the Metropolitan Life Building, famous Madison Square Garden, the homes of leaders in finance and fashion, to the stately mansions of old Washington Square; or, going north, the 'bus runs through the new shopping district (a veritable Aladdin land of rich wonders), past the beautiful new public library, the most noted clubs, the palatial residences along the east side of Central Park and the far-famed Metropolitan Museum of Art, at Eighty-second Street; or, crossing at Fifty-seventh Street, the 'bus traverses Riverside Drive, along which the most sumptuous residences of the city are grouped, and with an unequaled view of Columbia University, the Palisades, and the Hudson River.

The new Martinique covers a whole block and contains six hundred rooms. Every comfort or convenience that one could wish for in his own home is found here; the lighting, heating, and ventilation of the house are perfect; for the architect, Mr. H. J. Hardenburg, is one of the most accomplished in the country, and in this hotel he has assembled the best results of many years of experience. From the main entrance, or grand concourse, on Thirty-second Street, a spacious and beautiful room, walled in rich marbles and draped in rich velvets, to the remotest single room in the house, one is conscious of an atmosphere of good taste, luxury, hospitality, and unceasing generous service. At the right of the grand concourse attention is attracted by the main dining-room, which is a faithful copy of the Apollo Room of the Louvre. It is a beautiful example of the French Renaissance of the time of Louis XIV. On the walls are four delightful panels by Irving R. Wiles, and four by J. Carroll Beckwith, portraying the most famous beauties and historic personages of that period. Drawing-rooms and the Louis XVI. dining-room, with its pilasters of Circassian walnut and panels of golden silk tapestry, complete the ground-floor. The grill-room, the café, and the two great banquet-halls are the other chief public rooms.

The Martinique still maintains the fine tradition of hospitality and excellent cuisine and service handed down from the times of the founder of the enterprise, John Taylor, whose restaurant, at Franklin Street and Broadway, was in 1851, one of the leading attractions of the city. William Taylor, a brother, established in 1875 the St. Denis, at Eleventh Street and Broadway, and its fame is still illustrious. The management of the new Martinique is in the hands of Mr. Charles Taylor, a son of the proprietor of the St. Denis, associated with Mr. W. S. Gilson. Particulars regarding prices, location of rooms, etc., may be had by applying to the manager, Mr. Walter Chandler, Jr. ***

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A Bleach That Does Not Ruin Goods

THE startling announcement is made that a safe and sane bleach has been discovered—something that will make fabrics of wool or silk or cotton white, and keep them white without rotting the fiber. The new agent is called "active oxygen," and it can be applied to textiles of all kinds at the mill, in the laundry, or in household washing.

"Active oxygen" is pure and powerful; it harms nothing. It is used in soap on the skin of the most delicate; incorporated in powder it bleaches and preserves the teeth; in liquid form it cures ailments of the most sensitive membranes. Its beneficent action on textile fabrics is identical with that of the grass bleach, the gentle influence of which on the fabrics spread upon the greensward produces the purest white known without in the slightest degree affecting the strength of fiber.

For centuries the owners of mills and laundries have tried to duplicate the action of the grass bleach, while cutting down the time which it consumes in properly attending to its work. And with so many investigators at the problem it is not surprising that, little by little, various chemical agents were found to possess the property of overcoming the color compound of the original goods with a great saving of time. Unfortunately it was soon found that while the goods became white they also lost strength, and the whiter they were forced to be the weaker they became; until now cheap goods rely, to a certain extent, on the starch with which they are finished to hide this weakness, leaving it to a number of home or laundry washings to reveal it when these are blamed for the decay of the fiber.

Chloride of lime, employed in bleaching cotton, decomposes wool or silk. Vapors of burning sulphur, with which wool or silk is bleached, ruin cotton fiber. If lime or sulphur, therefore, be used in bleaching a cloth of mixed composition, the effect is disastrous. Moreover, the sulphur-bleached fabrics soon turn yellow.

The reason is well known to the manufacturing trade, and is readily comprehended by the layman. The sulphur smoke in acting on the coloring matter in animal fiber takes away oxygen. When the atmosphere comes in contact with goods so bleached they re-absorb oxygen and make an effort to reproduce their original color. As long as the sulphur is in the garment it acts as a shield against the atmosphere, but the first washing takes away this protection, and thereafter it is only a question of time before the atmospheric oxygen will restore the same old color more or less.

Thus we see that the inventions calculated to replace the effect of the grass bleach not only do so partly, but beget a number of very important faults which one has so far been unable to overcome in these artificial bleaches.

Happily, however, another class of investigators set for themselves a higher aim, in which the preservation of the goods was the first consideration; and since they have now also obtained the same satisfactory white as with the harmful bleaches, it may be considered that the question of bleaching with the same non-injurious active oxygen as is generated by the grass bleach is solved. The agent is in reach of all who care to use and wear goods bleached to a permanent white without weakening, without odor, and retaining lasting softness and elasticity.

The same active oxygen bleaching compounds are available for the laundries, and may even be employed in the weekly household wash.

The Eggs and the Cobra

THOSE ought surely to have been extraordinary chickens that were hatched by a certain hen in India, if we are to believe a tale that comes from that land.

It appears that an English official there had a hen-house, and a hen that was sitting. Unluckily for her hatching operations a cobra got through a chink in the hen-house. The cobra made a fine meal of well-warmed eggs, but when it essayed to retire by the same hole through which it had entered it found those eggs in the way. It was much too large to get out, so it stuck in the hole, half in the hen-house and half outside.

There it was discovered in the morning in a surfeited condition. It paid for its greediness with its life, and then it paid back the eggs it had stolen, for when the body of the snake was opened the eggs were all found unbroken and warm.

They were replaced under the hen, and in due time were hatched, none the worse for their peculiar incubation.

The strange fact that the cobra could swallow whole an egg much bigger than its own head is accounted for by the peculiar construction of that head. The head and jaws of the cobra are loose, and can be enormously stretched and distorted.

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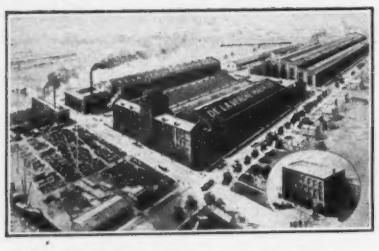

DE LA VERGNE MACHINE COMPANY, located foot of East 138th Street, New York City, manufacturers of Oil Engines, Gas Engines and Refrigerating Machinery of the most modern construction.

This Company claims to be manufacturing and offering for sale the most economical internal-combustion crude-oil engines on the market.

Aside from their wonderful economy in fuel consumption and attendance, they operate on low-pressure and slow-speed principles which prolong their life at least 100 per cent. over similar types of high-speed engines which are flooding the market.

These engines are known as Type "H A," in sizes from 17 to 100 H.P., and Type "F H," in sizes from 90 H.P. up to 350 H.P.

Aside from the manufacture of Gas Engines upon the well-known Koerting patents, the Company manufactures Ice and Refrigerating Machines in sizes from 5 to 600 tons' capacity. These machines combine permanent economy, low cost of maintenance and maximum capacity—three very important features which are embodied only in a construction developed by long years of experience and research.

Operating tests and valuable information along the ice and refrigerating lines are described in the bulletins compiled by the Company which are freely furnished to all interested.

Exceptional advantages and assurances are offered the prospective buyer by the De La Vergne Machine Company, as the entire results of thirty years' experience of specialization on the above mechanical products are combined in each machine turned out, thereby assuring the purchaser of a permanent investment, based on profit-paying capabilities.

This Company built the first practicable ice-manufacturing plants installed in the United States, and is prepared to furnish complete plants of any size, equipped with special machinery and appliances of its own manufacture, which have long been the standard of the world. ***

Samuel Verplanck Hoffman

As a member of one of the oldest Dutch families, it is only natural that Mr. Samuel V. Hoffman should take a profound interest in the historical associations of New York City and State. Like his ancestors, he has been all his life an active man of affairs, but he has, nevertheless, found the time to work hard in behalf of the New York Historical Society, and since 1903 has been its president, succeeding his father, the late Dean Hoffman.

The Society was founded in 1804, and for more than a century has been the most vital influence in its field. Mr. Hoffman entered upon his duties as president with a determination to carry out the plans of his predecessors to achieve the erection of a suitable building for the proper exhibition of the large collections of the institution. He was able to secure the co-operation of many wealthy and influential men, and the Society's new home at Seventy-sixth and Seventy-seventh streets and Central Park West is largely the result of his efforts.

Samuel Verplanck Hoffman was born in Brooklyn on May 12, 1866, the son of the Very Rev. Eugene Augustus and Mary C. (Elmendorf) Hoffman. His grandfather was Samuel Verplanck Hoffman, a lawyer and merchant of New York City, and he is a direct descendant of Martin Hoffman, who came from Holland in 1660. By marriage and otherwise the family acquired land in the valley of the Hudson, and its members have since been large property owners of that section.

Mr. Hoffman graduated from Stevens Institute in 1888 as a mechanical engineer. He also attended Columbia University, and is a Fellow of Johns Hopkins University. He now acts as a trustee of real estate, and is also a director of the North River Fire Insurance Company. He was married on April 17, 1895, to Miss Louisa N. Smith, and is the father of three children.

He is a Fellow of the Royal Astronomical Society, a trustee of the General Theological Seminary, a member of the Holland Society, the Sons of the Revolution, the Society of Colonial Wars, the St. Nicholas Society, the Chamber of Commerce, etc.; was on the Hudson-Fulton Tercentenary Commission, and belongs to the 7th Regiment of the National Guard of New York. His clubs include the Century, Grolier, Metropolitan, University, Army and Navy, of New York City; and the Metropolitan Club, of Washington, D. C. ***

CRUSTY UNCLE (who is weary of being asked again and again for pecuniary assistance). "Why the dickens don't you go home to your father and get him to kill the fatted calf?"
YOUNG HARD-UP. "He'd be a jolly sight more likely to kill the prodigal son."
—*From "The Sketch"*

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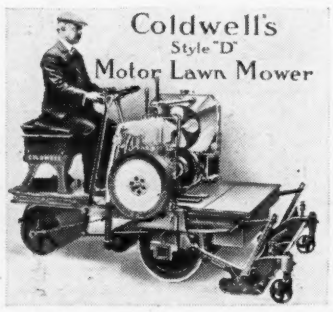

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Hugh Kelly & Co., Inc.

SINCE its establishment in 1884, the firm of Hugh Kelly & Co. has grown to be one of the largest factors in the sugar trade between New York and the West Indies. The scope of its operations is wide, and the strictly scientific and modern basis upon which it has placed every branch of the business has made its influence a beneficent one.

Messrs. Hugh Kelly & Co. are primarily industrial engineers, specializing on the design, construction, and equipment of sugar factories, plantation railroads, and auxiliary buildings. They have also paid much attention to the repairing of sugar machinery. At their Havana offices they maintain an organization which includes some of the best-known sugar-house engineers in the world, and are at all times ready to prepare estimates upon any subject pertaining to cane-sugar manufacture. During the past ten years they have built at least two of the most extensive sugar-houses in Cuba.

Besides being consulting and practical engineers, they are, themselves, in the plantation business and are among the largest importers of sugar from Cuba and Santo Domingo. They own one plantation in Cuba and two in Santo Domingo, handle the product from these places, and also sell on a commission basis for planters in the above-named islands and Porto Rico. They operate a fleet of steamers under their own charter, transport the greater part of the sugar they receive, and do a general steamship business. During 1910 they brought into this country 1,500,000 bags of sugar, and at the date of writing their business shows every sign of expanding.

In the manufacture of the raw article, they have perhaps been pioneers in putting sugar-houses under chemical control. To eliminate the heavy losses that were formerly sustained, they engaged expert chemists to watch every process of manufacture. The latter have now been improved and systematized to the point of reducing waste to a negligible quantity. During a typical week in 1910, one of the Cuban mills showed an actual recovery of sugar from the cane juice brought into the house of 94.68 per cent. Under the crude methods that were formerly employed, the average recovery rarely exceeded 70 per cent. Largely owing to the high standard set by Hugh Kelly & Co., no first-class sugar-house is now regarded as complete unless it is under chemical control.

Hugh Kelly & Co. have also gone into the agricultural end of the business and have made many improvements in methods of cultivation, thereby increasing the yield of sugar per acre as well as the general quality of the cane. They are noted for the attention they pay to the comfort of their laborers, and the villages adjacent to their plantations are models of their kind. ***

The Honolulu Iron Works Co.

THE HONOLULU IRON WORKS COMPANY was established in Honolulu, Hawaii, in 1852, by Mr. D. Weston, the inventor of the suspended centrifugal machine, for drying sugar.

The works now occupy six and a half acres of ground and are specially designed and equipped for the manufacture of sugar-making machinery. The three main shops are each 300 to 400 feet long and 90 feet wide. The number of employees varies from 300 to 600 men, including a competent engineering force, the entire business of the company being under the management of Mr. C. Hedemann, of Honolulu.

A large majority of all the new machinery installed in the sugar factories of the Hawaiian Islands has been manufactured by the Honolulu Iron Works Company, and since 1899 they have built the following modern complete sugar factories in the Hawaiian Islands, with cane capacities per diem as indicated:

Oahu Sugar Co., 1,450 tons; Waialua Agricultural Co., 1,400 tons; Ewa Plantation Co., 2,500 tons; Olaa Sugar Co., 1,200 tons; Puunene, 2,500 tons; Puako, 200 tons; Hawi, 800 tons; Wailuku, 1,200 tons; and Hilo Sugar Co., 1,200 tons.

And, in addition to the above, have designed and constructed one complete 1,000-tons factory and distillery for the Tabasco Plantation Company, Oaxaquena, Mexico; remodeled and increased in capacity four factories in Porto Rico, including the Guanica Centrale, having a capacity of 4,500 tons of cane per diem; also designed and constructed one 650 tons capacity, two 1,000 tons capacity, and one 2,800-tons capacity, new factories erected on the island of Formosa, for the Taiwan Seito Kabushiki Kwaisha Co., three of which were in operation last season, giving excellent results.

They are now erecting a complete new factory of 1,000 tons capacity in the Philippine Islands, which, in many respects, will be superior to any other factory in operation; and are designing and manufacturing a 1,000-tons factory to be erected in Formosa; a new 1,400-tons cane factory at Adeline, Louisiana, U. S. A.

The Hawaiian Islands have a world-wide reputation for excellent results in sugar-cane culture and high recoveries in manufacture, which is due principally to the introduction of improved methods and machinery. The manufacturing results for 1909 in 37 Hawaiian sugar factories show that the average loss for the year was only a trifle over 14 per cent. of total sucrose in cane, and in the best factories less than 10 per cent.

In May, 1905, they opened their New York office, under the management of Mr. D. A. Fox, formerly of Honolulu, who has at present an office force of 20 engineers and draftsmen, and is particularly well equipped for designing new sugar factories or remodeling of old places. The New York offices are at No. 29 Broadway. ***

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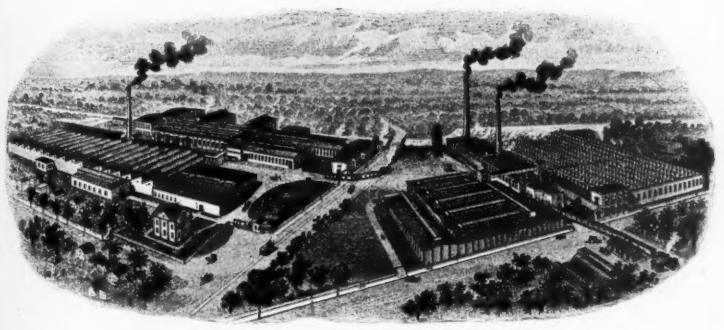

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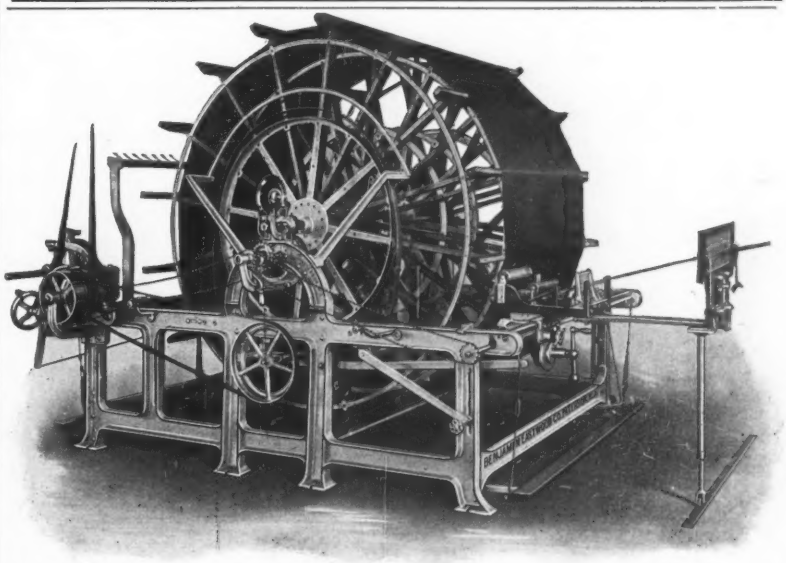

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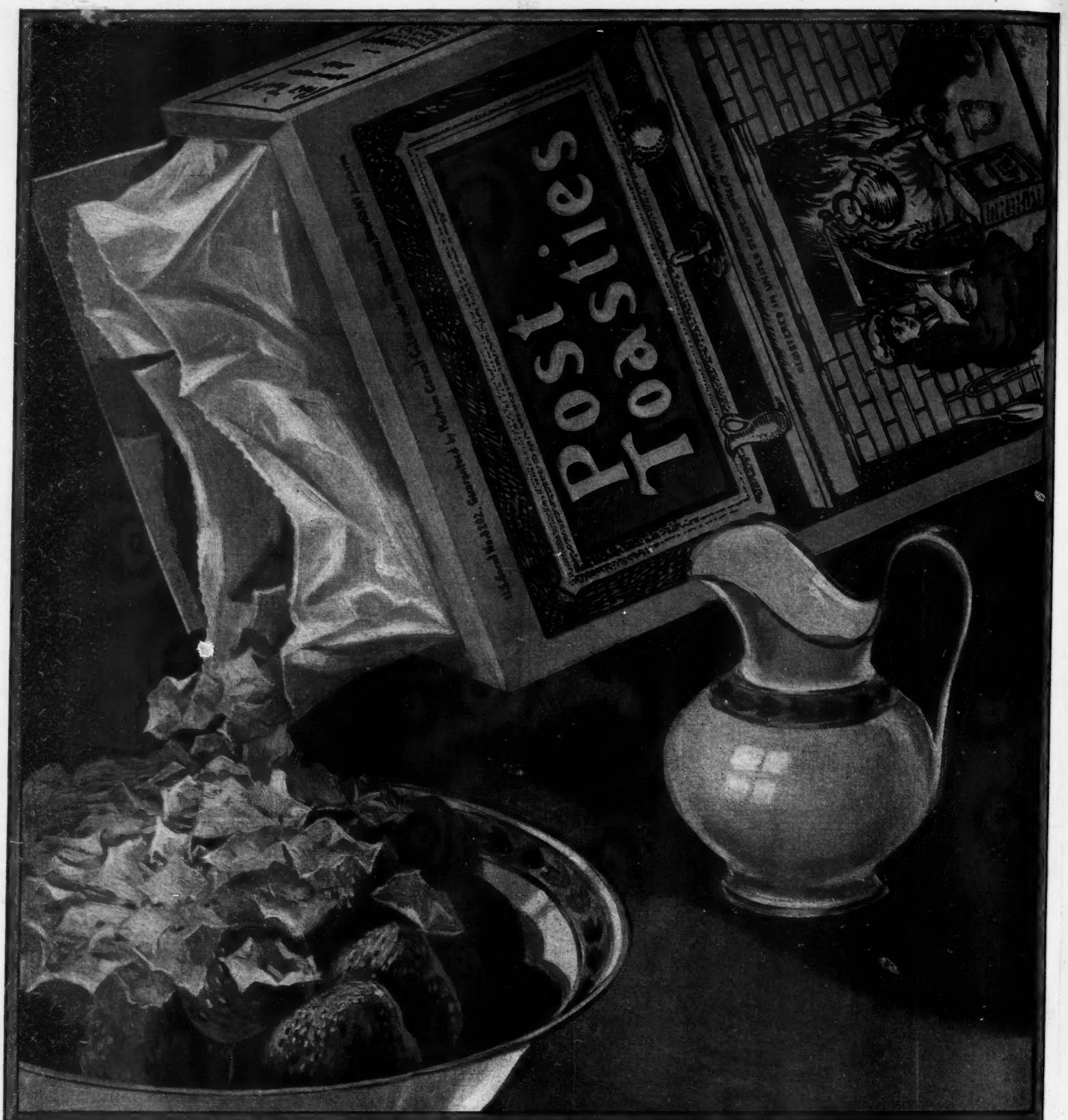

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